Industrial Finishing

Reg. U. S. Pat. Off.

An Independent Publication Devoted to the Finishing of Industrial Products

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FROM THE EDITOR'S WINDOW

SEPTEMBER is here and summer vacations are over! Men responsible for autumn activities return to work with minds and bodies refreshed—with renewed vigor and enthusiasm and a charged will to surpass past performances. This is the picture in organizations where things are to be done successfully and profitably.

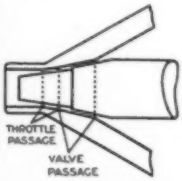
Evidence of a real commencement in fall activity in the industrial finishing line appears in this issue of INDUSTRIAL FINISHING Magazine which carries more pages to accommodate September's increased volume of advertising. More finishing materials, equipment and supplies are being offered for investigation, selection and use. Industrial concerns and individuals who operate paint shops, finishing departments and refinishing establishments are afforded the choice of a greater variety of excellent products.

In this line, as in every other line, the better informed the buyer or user is, the better prepared he is to choose wisely just what materials, methods of application and equipment are most profitably adapted to his company's products—when all conditions are taken into account according to their relative importance. One's own experience, supplemented by the immense fund of practical information obtainable from the pages of INDUSTRIAL FINISHING is of greatest value in correctly appraising the relative merits and suitability of materials and equipment offered for selection and purchase.

O. H. Rohr

Managing Editor

The Spraco OFFSET NEEDLE



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3291

". . . a short article calling attention to a phase in finishing which is very rarely mentioned but which is very prevalent. I refer to the propensity on the part of many manufacturers to place upon their products the cheapest finish possible."—

W. E. Brooks
Industrial Sales Manager

PLANNING AND ATTAINING A QUALITY FINISH

Industrial Sales Manager of Wadsworth, Howland & Co., Inc.* emphasizes the need of planning the ultimate finish on manufactured articles before production begins, and then choosing reliable materials that will produce dependable results

By W. E. Brooks

IN ANY ACTIVITY—athletic, industrial, commercial, educational, social or political—much depends on a good and prompt start; but we should not overlook the fact that the reason for any start at all is that a finish must be made.

This principle certainly applies to the production of any article that depends for its success on the approval of the purchasing public. Regardless of how well conceived or how thoroughly constructed an article is, if it is not properly or attractively *finished*, even though of much intrinsic worth, it must overcome a serious handicap before consumer acceptance is achieved.

This is an age of systematic planning and of budgetary control, and the management of any worthwhile concern demands to know not only the history of his establishment, but where it is going and why. Why then should not the production manager begin to plan the finish of his product before the first steps are taken, instead of leaving it to be done in haste and in the cheapest possible manner—as is done in so many cases? Indeed, contact with some producers would convince one that the finish on their product is an afterthought entirely.

In view of the fact that to the average purchaser, the value of many of his purchases depends very largely on appearance, is it not the part of wisdom and prudence for the manufacturer to decide on the nature of finish to be used as early in the purchasing and production program as possible?

Is there any wisdom in purchasing castings, for instance, at a saving of perhaps 1/8 of a cent per pound, and then spend hours

*Paints, Varnishes, Stains, Enamels and Brushes; 141 Federal St., Boston, Mass.

of labor and pounds of filler, spot putty, etc. before a finish can be applied which will only make them suitable for shipment?

What kind of a policy dictates the purchase of a poor quality of lumber, or lumber that contains natural oils or which is improperly dried, all because of a small saving per 1000-ft., and then paying a finisher to worry, agonize and perspire and produce a finish the thoughts of which prevents his peaceful sleep at night?

Why not lay out a definite plan of action from start to finish and then call in the purchasing department and every department involved and plainly explain what is proposed and how and why? Would not such action prevent much friction, worry, loss and failure now existing in industrial enterprises today?

The last thing applied to your product is the first thing your prospective customer sees, and on its beauty and permanence depends much of the satisfaction experienced in the use of such products. The finish of any product is the last place in the world to exercise parsimony—more commonly termed meanness—if success or resales are to be desired.

To summarize: The production of any article for sale, resale or use should be a well-balanced orderly process from start to finish and such finish should be a credit to the product and a sales help, rather than a doubtful display of finishing material which is "just as good and sold for less per gallon."

Let the end justify the work! Let the product be truly a *Finished Product* and a credit to the maker.

The purpose of this article is by no means intended to encourage the slighting of necessary processes "in the white," to permit an extravagant finish, but it is intended to call attention to the extreme importance of *finish*.

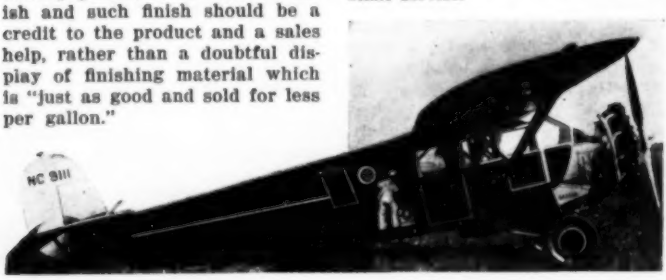
When manufacturers can truthfully say with St. Paul "I have fought a good fight, I have *finished* the course, I have kept the faith," then will many of the troubles of finishers, paint manufacturers and purchasers be eliminated forever.

Your product in a "new dress" soon comes to the attention of those "moderns" that make up the whole of our population.

Cook Paint Men Use Airplane, Traveling

The purchase of an especially-built, especially-equipped Wasp Fairchild "71" by the Cook Paint & Varnish Co., at a cost of $24,500, is announced by W. H. Hoover, vice-president of that concern.

This plane is said to be the first of a fleet which will be used by Cook executives in trips around the country on business for the recently-formed aviation division of the Cook concern. It is painted in Cook's gray and Cook's Sunfast red, and has attracted a great deal of attention from visitors to Lambert Field in St. Louis county, where it is now quartered. It is expected to leave shortly on its initial flight and afterwards will be kept in almost constant service.



Varnish Finishing

RADIO CABINETS

Industrial Finishing's Field Editor illustrates and describes the arrangement of equipment in a radio cabinet finishing department, and explains the complete finishing process employed

By P. C. Bardin

THE APPLICATION of a "piano finish" on 400 radio cabinets per day is the rate of production in the finishing department of the Adler Mfg. Co. at Louisville, Ky. The plant formerly manufactured organs and pianos, and most of the employees are accustomed to producing a "piano finish." The finishing department has several interesting features some of which are revealed in the floor plan layout exhibited in this article.

The finishing department is divided into seven separate rooms by brick partition walls fitted with metal-clad doors; in case of fire in either room, these doors will close automatically. The use of separate rooms aids in segregating cabinets in the various stages of the finishing process and, with plenty of storage space in each

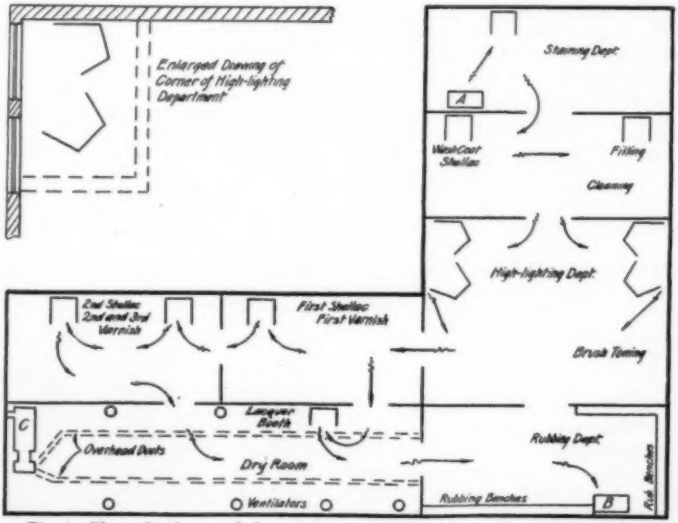


Fig. 1—Floor plan layout of the seven rooms which make up the complete finishing department. Cabinets in the white enter by elevator A, and leave by elevator B.

room, promotes a steady and even movement of cabinets from the elevator *A* in the staining room to the elevator *B* in the rubbing room. The trimming room on the second floor is immediately below

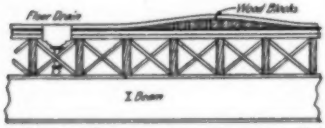


Fig. 2—Cross section of waterproofed floor, water drain and raised border, which are installed at each area occupied by a spray booth or set of spray booths.

the rubbing department and the packing-and-shipping department occupies space on the first floor under the trim shop.

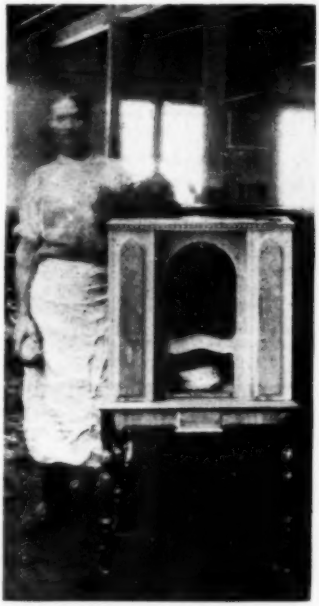
I wish to call attention particularly to the location of the spray booths where the high-lighting is applied. The partial floor plan layout marked "Enlarged drawing of corner of high-lighting department" in Fig. 1. shows the relative positions of a pair of booths. They are located semi-facing each other, and facing outside windows. This is preferable to having the backs of the booths against an outside wall.

Locating the open fronts of booths to face the windows, places the work in direct natural light which enters over the operator's shoulder; by raising the windows, fresh outside air is admitted which aids in removing the spray fumes. The exhaust pipes from these booths pass through the roof just above the booths.

Waterproofing the Floor

This company has found a simple but effective method of waterproofing the floor around all spray booths, thereby obtaining a material reduction in insurance rates. The waterproofing is accomplished by placing heavy asphalt waterproof paper on top of the present floor and then covering the asphalt paper with a new tongue-and-groove floor.

At the extreme outer edges of the area to be waterproofed (see dotted lines in upper corner of Fig. 1.) beveled-edge wood blocks or sleepers are nailed to the present floor, as shown in Fig. 2. The new top flooring (tongue and groove) extends over these wood blocks. The beveled strips or sleepers should be cut to make a 1¾-in. rise at the highest point, and the width of the raised portion of the floor should be 3-ft. A floor drain and trap is placed at the lowest point in the enclosed



Sea grass is used to clean off surplus filler

area, and connected to a drain pipe leading to the sewer.

This method of waterproofing is economical to use in buildings designed and built before spray finishing came into general use; it is recommended because the raised portion offers no obstruction to the movement of shop trucks or cabinet caster trucks. If the work is carefully and correctly done, the raised floor will be smooth and rounded.

At right: One of the spray booths where cabinets are high-lighted.
Below: View in drying room which is equipped with modern heating, ventilating and air-cleaning apparatus. The system includes 16 of the double outlets shown beside the post in foreground of this picture. Notice portable racks in background.

Completely Equipped Dry Room

The room for drying varnished cabinets covers half of the entire third floor of one wing of the mill building, with plenty of space for cabinets and racks. This room is well lighted by large windows, and is equipped with a modern type of washed-air varnish dryer unit; also with ventilators placed along the walls. Atmospheric conditions are controlled automatically to maintain a temperature of 120-deg. F., with 40 percent moisture content. This equipment insures correct, rapid drying in a room that is free of fumes.

The Finishing Process

Referring to Fig. 1, cabinets enter the finishing department by the elevator *A*, and are given a spray coat of oil stain on the inside and water stain outside, followed by a wash coat of shellac. When the shellac is thoroughly dry the surfaces are sanded, after which the first filler coat is applied; then the surface is hand cleaned. After 24 hours the second filler is applied and cleaned. Next day a coat of shellac is sprayed on, followed by a sanding

operation. High-lighting is done by spraying the same day, followed by a second coat of shellac to cover the glaze. Next day this surface is lightly sanded, followed by two successive coats of varnish applied each day for two days, sanding between coats.

The final coat of varnish is sprayed on and the cabinets are placed in the drying room to dry the finish thoroughly. Upon leaving the drying room, the cabinets are rubbed with pumice and water followed by a second rubbing with oil, pumice and rottenstone to remove all scratches. All flat surfaces are rubbed with portable rubbing machines. The final operation on radio cabinets in the finishing room is polishing with a high-grade furniture polish.

On fixture work and some radio cabinets, where specifications call for it, the cabinets are sprayed with lacquer in the lacquer booth (in the drying room, see Fig. 1), this work then going directly through the drying room to the rubbing department—if rubbing is specified—or to the packing department. It might be added that there are frequent inspections on all work as it progresses through the various rooms of the finishing department, this preliminary and intermediate inspection saving much time and material on work that would not pass the final inspection.

Du Pont Sectional Sales Meetings Planned

The Paint, Varnish and Lead Division of E. I. du Pont de Nemours & Co. is holding this year a series of sectional sales meetings in eight different cities. One of the advantages, it is believed, in holding these meetings is that the local problems can be taken up and discussed with great thoroughness and in more detail than could possibly be done in a general convention. The programs for the various meetings will cover in a general way the progress in sales and the new advertising and sales plans. Special emphasis will be placed on the development of business in the territory where the meeting is held. The slogan of the year is "Grow with du Pont."

A special feature of the meetings will be demonstrations of the new "Black Label" line of products, especially made for painters. These include 50/50 semi-paste paint, quick-drying white enamel, one-coat enamels, flat whites, stippling flat, primers and undercoaters.

DeVilbiss President Visits Branches Abroad

Mr. Allen D. Gutchess, President of The DeVilbiss Company, sailed on the Leviathan August 16 on a tour of the overseas subsidiary DeVilbiss companies and DeVilbiss foreign sales offices. In England, France and Canada The DeVilbiss Company is incorporated under the laws of those respective countries and operates manufacturing and sales establishments in every way as local enterprises.

These foreign operations have existed profitably for years, but within recent months the increasing industrial activity in many countries has so developed existing and potential markets as to necessitate much more comprehensive manufacturing and sales operations. Mr. Gutchess' trip is to arrange for these expansions.

Worthington Pump and Machinery News

E. J. Schwanhausser, for the past two years assistant manager of the Harrison works of the Worthington Pump and Machinery Corp., has been appointed manager of that company's Buffalo works.

Butterman Represents Paasche in Philadelphia

Mr. W. E. Butterman has been appointed as District Sales Manager for The Paasche Airbrush Co's. Direct Factory Branch at 2401 Chestnut St., Philadelphia, Pa. With a competent staff of sales and service engineers, Mr. Butterman will cover the territory of eastern Pennsylvania, lower New Jersey, Delaware, Maryland and the District of Columbia. A complete stock of the Paasche Airfinishing equipment and parts is maintained at this factory branch.

AIRCRAFT BEAUTY-- COLOR

What color means to the aircraft industry, how it can be employed effectively, what factors enter into an intelligent selection of colors and why the quality of every finishing material used should be known by test

By Dennis O'Brien*

IN AN ARTICLE published in the *Brooklyn Daily Eagle*, issue of August 11, 1929, under the title: "Safety Is 7th Consideration of Buyers of Planes," Mr. Frank J. Carmody writes as follows:

"According to one of the most successful sales managers in the aircraft field, the person considering the purchase of a plane rates the various characteristics as follows: 1—Speed, 2—Suitability, 3—Beauty, 4—Comfort, 5—Utility, 6—Serviceability or ease and economy of repairs, 7—Safety."

Beauty Ranks Third

The third consideration is *beauty*, and what is it that makes for beauty in an airplane? One can hardly say it is the design of the ship. Look at the best-designed craft when it is in the shop naked of finish and color; one would hardly call it beautiful. What gives the ship the third quality in the seven considerations of discriminate buyers? Color, nothing else. Color can be used effectively to impart an attractive appearance to the airplane, as it does to automobiles. Up until recently however, aircraft knew but one color—aluminum.

Aluminum is a wonderful pigment! It makes one of the most durable finishes known, but it is drab in color; it doesn't bring out the fine lines of the aircraft, nor does it accentuate the stream line.

One of the largest airplanes in service today is also, to my mind, the ugliest because there is absolutely no finish on it—not even aluminum. It attracts only because of its huge size, not its beauty. An aluminum-finished airplane is difficult to keep clean; every oil and grease spot, every mark of dirt or otherwise imprints itself indelibly upon the surface.

For Sales Promotion

Someone may ask: "What difference does it make what color you paint the ship? No one can distinguish color at an altitude of 1000-ft."

But aircraft isn't sold at 1000-ft. altitude. While the sale may be finally consummated in flight, in the final analysis the sale is made in the factory or on the field, with the buyer inspecting it at close range, and here color is a factor.

On the flying field, I have often heard visitors comment on the beauty of some plane. As a rule these people know nothing of the technique of the craft; most of them do not know a fin from an aileron, or a rudder from an elevator. It is the decorative color scheme that appeals to these people and causes them to refer to the beauty of the craft.

Color should be used for sales promotion, for recognition, for visibility and for durability. Color

*Service Department, Fairchild Airplane Corp., Farmingdale, Long Island.

is a sales factor, and a ship decorated tastefully in rich hues will help promote sales. Distinctive color will permit easy recognition of the craft.

For Visibility

Some consideration should be given the pilot when choosing color for the ship. Today, around any large field or airport, the sky is becoming filled with aircraft. A pilot takes off and suddenly through the clouds another plane appears for a landing. The present type of aircraft engine is so mounted as to allow the pilot a minimum of visibility.

Let us paint the plane in colors that will reveal the craft more clearly, instead of permitting it to appear as a doubtful speck or part of a cloud to the other pilot. Let us give him visibility with color.

Protection; Durability

The airplane manufacturer owes it to his reputation and to his customers to select finishes and colors for their durability. It is poor economy to select finishes and colors because of a low price appeal. When economy is the thought in mind, the cheapest paint or lacquer to purchase is one that possesses *quality*. No responsible aircraft manufacturer would use any other than the best of metal tubing in the fuselage frame.

The interior of the tubing has the best grade of oil forced through it, a most careful and minute examination of all welds are made, weld spots are cleansed of all scale, and an inhibitive paint is applied as a further protective measure. After all, this tubing is only the framework supporting the fabric and metal covering, and unless such covering is coated with high-grade material, regardless of cost, then the time and material used in safeguarding the tubing is wasted.

And this doesn't mean that we can use a superior grade of tightening dope because it is nearest to the tubing and an inferior grade of color finish (dope or lacquer) because we feel that the undercoats of dope will be sufficient for the protection of the tubing. The selection of color should not be subjected to snap judgment. No color should be accepted and used in mass production until it is given a thorough break-down test in the paint shop test rack.

Color Selection

The selection of the color scheme must be made by someone who has a thorough knowledge of color. The person choosing the color must know the complementary colors; he must know where to place the "warm colors" and the "cold colors;" he must be able to make an exact division of each in order to get a proper balance of color. A ship can be made to look heavy or light, large or small, cumbersome or graceful with color.

Plasticizers added to lacquer so as to give it flexibility, are now used by nearly every aircraft builder as a finish over dope. Thus the aircraft field has a choice of every color used in the automobile trade—and then some. I know of one firm—and there are probably others—that has established an engineering department where experts in color schemes can be consulted; their advice is cheerfully given without obligation.

What Tests to Make

The foreman finisher should test all color submitted by firms who are seeking the business. The

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Sanding Sealer No. 2550 is a typical Zapon achievement, bringing to the manufacturer greater economy • • • • • • •

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Generous sample with full instructions sent on request • • • • • • • •

THE ZAPON COMPANY, Stamford, Conn.

Inquiries invited

tests should include those for hiding power, density, adhesion, flexibility, durability and covering power. A short time ago I had occasion to use a black on a cowl and set of struts. It required an entire gallon to do the job. Later I used another black and turned out a much better job with half a gallon of material. Surprised at the results, I looked up the prices of the respective blacks and found that the black which did the job with a half gallon cost but 20c more than the black that took one gallon to do the same job.

Further comment on the performance of these blacks would be superfluous. The point I wish to make is that the foreman should test all colors for the sake of economy.

The foreman owes it to himself, his employer, the prospective buyers of aircraft, and the paint manufacturers, to test in a careful and thorough manner all of the material he uses.

Paint Pigment Properties

Brief sketches of some of the general properties of the pigments commonly used in the manufacture of paints used in industry

By the "Colorist"

DIFFERENT technicians at various times have inquired about the general properties of the most commonly used paint pigments. In this article, therefore, I am summarizing what I believe is the most important information pertaining to these properties.

Basic Carbonate White Lead consists of about 75 percent carbonate of lead and 25 percent of the hydroxide of lead. Probably the greatest objection to paints made with white lead is that they have a tendency to "chalk." Chalking designates the condition by which the paint can be easily removed from a painted surface by rubbing it with a cloth.

Paints made with this pigment have good inhibitive properties; the latter term signifies the power of the pigment to retard rusting and corrosion when it is applied to iron structures. This white pigment is readily affected by atmospheric gases, the most destructive gas being hydrogen sulphide which turns the white lead black, due to the formation of black lead sulphide. Likewise, the pigment should not be used with pigments having a sulphur content. This pigment is also somewhat deficient in spreading potentialities.

Zinc Oxide has an excellent whiteness and is very stable chemically. It possesses good inhibitive properties; also good drying properties. The tendency of this pigment to cause the paint to peel and crack is perhaps the chief objection.

Lithophone consists of 75 percent barium sulphate and 25 percent zinc sulphide. This pigment is affected by the rays of the sun, therefore it is preferably used as an interior decorative paint pig-

Finish . . . .

that "stands up"

Protective coatings that stand up must be compounded with scientific technique to meet the specific conditions in your finishing department.

We maintain a baking, spraying and finishing department with trained operators in addition to technicians in our chemical laboratory. Every recommended "Impervious" formula is demonstrated on the product for which it is prepared.

Write for details and send your inquiries to

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protective coatings
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Varnishes, Enamels, Pyroxylin Lacquers, Electric Insulating Varnishes

ment. This whiting has extreme whiteness and is not affected by sulphur gases. It has excellent durability.

Chrome Yellow is very rich and brilliant. This dry color has excellent resistance to light and also good hiding properties. As far as its inhibiting properties are concerned, there is quite a difference of opinion; some claim that its inhibiting properties are excellent, while others nullify this statement by saying that the water-soluble products absorbed in the manufacturing process tend to add to corrosion. This pigment is affected by sulphur gases forming the hideous black sulphide of lead. This pigment retards drying activities of paints.

Ocher is a hydrated oxide of iron permeating a siliceous base. It is not active chemically, therefore it is not affected by atmospheric conditions. It has moderate opacity, but some inferior brands are completely transparent in oil.

Siennas and Umbers are similar to the ochers as far as qualitative chemical composition goes, but they have a greater amount of iron and manganic oxide. These pigments have poor hiding properties and are primarily used as tinting colors.

Prussian Blue is an iron compound, having a powerful tinctorial strength. It is permanent to light and atmospheric conditions. It has a very poor resistance to alkali, therefore it cannot be mixed with basic pigments.

Ultramarine Blue is a dry color not affected by alkalis or light. It is not resistant to acid fumes. It should not be mixed with lead containing pigments, as the sulphur components of the blue would combine with the lead to form black lead sulphide. Engineers claim that it should not be used as pigment for painting iron, as its sulphur content hastens corrosion.

Red Lead consists of the oxides of lead. It has excellent resistance to light. It is a strong oxidizer of oil, therefore an excellent drier. It possesses good inhibitive properties when applied to iron and steel. It is affected by atmospheric hydrogen sulphide gases.

Carbon Black is usually sold as 98 percent pure carbon. This pigment possesses great permanency, but retards the drying of the paint.

Polytechnic Institute Courses

The Polytechnic Institute of Brooklyn (Court and Livingston St.), announces graduate courses in engineering, chemistry, physics and mathematics. Courses will be offered in the evenings during the year 1929-30 to properly-qualified graduates of universities and colleges who wish to become candidates for the master's degree, or who desire to take one or more advanced courses of study. All courses begin during the week of September 30 and continue through May.

Buys Kessler Chemical Firm to Form Unit

The American Commercial Alcohol Corp., manufacturer of products utilized mainly in the making of lacquers, has purchased the business of the Kessler Chemical Co. The Kessler Chemical Co., will be expanded and developed through a wholly-owned subsidiary of the American Commercial Alcohol Corp. of the same name.

Dr. Kessler will be president and Dr. Helfrich will be vice-presdent of American Commercial Alcohol's new subsidiary. Dr. Kessler also will be a vice-president of the American Commercial Alcohol Corp.

The American Commercial Alcohol Corp. was formed in Maryland in 1928 and acquired all the assets of several industrial and commercial alcohol companies immediately thereafter.

The company owns manufacturing plants in Pekin, Ill., Philadelphia, New Orleans and, through the American Commercial Alcohol Corporation of California, operates a plant in Sausalito, Calif.

NEWEST FURNITURE STYLES FROM EUROPE

Industrial Finishing's Specialist in colorful modern art and design, traveling in Europe, submits interesting notes, ideas, suggestions and color illustrations of the latest styles in European modern furniture

By La Vera Ann Pohl

VARIOUS excellent exhibits in Berlin, Hamburg, Cologne and Düsseldorf, Germany, reveal some striking pictures of the past and present trend of modernism in furniture building. Even in modernism there is already the "more moderne" or the "new mode." The period of 1920 was the period of expressionism and the 1929-30 season begins the period of restful ornamentation. Germany, the original home of the modernist designers, is constantly showing traces of continual improvement in decoration and design.

The visitor cannot fail to be impressed with the new and more thoroughly developed ideas of comfort—of almost inconceivable ideas in color tones—so well regulated, so perfectly harmonized and so excellently blended as to seem at the end of further possible development or perfection.

Chairs are built low and deep, colorful and cozy. All modern furniture is built with this same inspiration. The newest modes in modernism make use of aluminum, copper and brass. For instance, an effective inlay in the back of a chair can be aluminum or brass and have a copper pattern or design laid in. The sides of a chair are frequently inlaid with one or two of these metals. The result is surprisingly interesting and effective. A table top

Color Illustrations ***(Opposite page)***

No. 1—A man's chair made of Caucasian nutwood. The cushion is made box spring fashion; the section *B* is slightly rounding in front and *A* is an adjustable back. The finish consists of several coats of high-grade varnish rubbed to a mirror-like luster. A very serviceable moderne material covers the cushion. This chair, built low and deep, carries the modern note in every sense. It is decorative, simple, luxurious and well built. It also illustrates the dignity in moderne furniture building.

No. 2—A full-length mirror and dressing stand; a combination for milady's boudoir. This is a clever arrangement of design as well as highly individual and practical. If you bring the piece marked *CC* down to *AB* and *DD*, and then tip it upside down, you will find the design for the seat. If you eliminate the piece marked *CC*, you have the design for the lamp. As a result you have what is called a *Vanity Ensemble*. The mirror is simple, having no engraving; it is backed by copper or wood. The vanity table is made of lacquered wood; all the knees or curves are highly polished and the remaining surfaces have an average gloss. The finished chair could have a taffeta tufted cushion or a loose colored cushion as illustrated.

No. 3—A novel arrangement of combination smoking stand, magazine rack and newspaper container. Section *A*, which has a door, can be used as a supply section for pipes, bottles, etc. Section *B* supplies a convenient but perhaps unique way of keeping magazines in order.

may have no carving, but one may find several metal bands ornamenting an otherwise simple expression in wood.

Magazine stands and individual book stands are found beside each cozy chair or sofa, always carrying further the conception of design and color brought into the chair. A suite of this type always carries the same note of decoration. However as to color, one finds the chair lighter or darker in value.

Tables: Small end tables or service tables are generally decorated to match chairs and book stands, or at least they are made to feel a certain partnership thereto. It is the desire of designers and manufacturers to make each individual room a picture of loveliness—a series of harmonies in design, decoration, color and wood.

Color notes observed in one complete suite of living room furniture including tables, chairs, book stands, ash tray stand, sofa and piano, are as follows:

1—CHAIR: Cobalt blue (not sharp). Flesh (on the salmon side).
2—CHAIR: Flesh (on the salmon side). Purple (blue purple).
3—CHAIR: A combination of the other two.
4—SOFA: Soft sea green with deeper green cushions.
5—TABLE: (Top) Opalescent oyster color (bright glossy finish). (Legs) Deep blue purple.
6—TABLE: (Top) Medium Red purple (opalescent effect). (Legs) Prussian blue, silver finish trays.
7—MAGAZINE RACK OR STAND: Prussian blue, silver finish trays.
8—PIANO: A transparent blue over curly maple (the effect unusually interesting and lovely).

A dining room suite in the following colors: Chairs and table in curly maple rubbed transparent blue. Seats, soft rose gray. The decoration in table and back of chairs is in copper and brass with white striping. The sideboard or buffet is of the same design; however, it is rubbed to a high luster in beautiful pale soft green.

Living room furniture (upholstered) is in many cases tufted, the tufting pattern being wide and the material being soft and very pliable. Many times the tufting carries out a design similar to modern wallpaper patterning or curtain goods. However, when the upholstering is at all figured or striped no tufting occurs, as the figure is enough of design. Much use is made of marble and composition materials in beautiful colors—and always in this case a whole service is made to conform to the colors contained in these foreign materials. The tops of many end tables, service tables, and coffee tables are made of marble or composition materials.

The rhythm of line in the designing of chairs, tables and stands is more apparent in the various accentuations of color or polished surfaces. For instance, polished surfaces play a great deal of importance in the curves; a slight curve is highly developed in a high luster when the balance remains but a usual high gloss. Rhythm is also accentuated by the proper development of the grain in the wood, and where a particularly beautiful grain is involved, extra consideration is given to its development.

Modern furniture building has become a fine art requiring mastery of the art of design. Designers are making use of rare alloys, curious skins, enamels, lacquers, exotic woods, ivory and marvels of glass, marble and egg shell.

To say the least, furniture today is highly individual. Each suite is designed with a sense for personal and individual appeal. Modernism or our modern expression will not only combine with

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When it is necessary to strip an enamel or lacquer finish from metal parts quickly, and where space is at a premium, one of the quickest and most economical methods is to use an electric stripping tank which may be rigged up in any plant (preferably a factory that has an electroplating room) at low cost. The equipment consists of:

1—A seamless steel tank of suitable size to receive the material to be stripped.

2—Steel cathodes, which may be cut to proper size from ten or 12-gauge hot or cold-rolled sheets. Cathodes for a tank 3-ft. deep by 8-ft. in length should be about 28 x20-in.

3—Four copper rods (a little longer than the tank) on which to hang cathodes and hooks that carry material to be stripped—two copper rods for cathodes and two for material hooks.

4—Bent copper hooks for supporting cathodes and for holding material to be stripped in the solution.

5—Cleaning solution of high potash content.

6—Steam coils to heat potash solution to boiling point.

7—One electric switch.

8—Bus bars to supply current to tank from plating room, if handy.

Electric connections should be arranged so that the electric current may pass through cathodes to material or visa versa. This is essential, as material will strip better if current passes from cathodes to material for about one minute to start disintegration of enamel or lacquer. Then the current is reversed and material should be thoroughly stripped in five or six minutes.

Precautions should be taken as follows:

1—Do not throw large lumps of cleaning material into the tank, as this is liable to cause an eruption which will throw scalding solution on workmen.

2—Electric current should not pass from cathode to material for more than two minutes.

It is not necessary to have a workman watch material while it is being stripped.

Metal parts that cannot be hung on hooks because of size, may be placed in copper baskets and suspended from rods in same manner as other material. However it will probably take more time to strip off the finish from parts held in baskets. If the tank is in constant use, two water-pails full of cleaner should be added to every 500 gallons of water each day. The tanks should be cleaned twice a week.—B. L. Thomas.

Color can dress up a product, a shop, an office, a typewriter, a fountain pen and even a letter head. The universal application of color today represents a requisite to the manufacturer—not an unusual method of attracting sales.

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FINISHING OFFICE DESKS

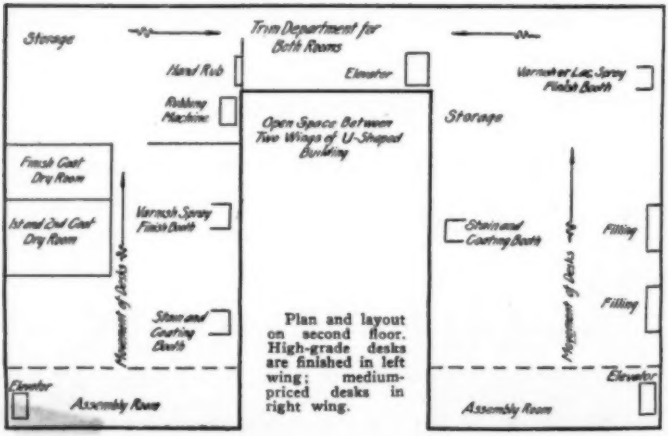
Floor plan layout, description of equipment and detailed outline of finishing operations in a medium-size establishment that manufactures several types and styles of office desks in mahogany, walnut and oak

By P. C. Bardin

STYLES AND DESIGNS in office furniture have shown vast improvement in the last two decades. A better and more beautiful desk can be purchased today from the stock supply than it was possible to obtain 20 years ago in a custom-made desk. Today we have office suites, and the pieces making up the suites are really fine furniture.

It was due to that ever increasing demand for high-class office suites that the Imperial Desk Co., Evansville, Ind., installed the necessary equipment to build and finish this type of furniture. This company also manufactures a medium-priced line of roll-top and flat-top desks, standing desks, typewriter desks and stands.

The plant is equipped to manufacture plywood tops and panels, and all machines are directly motor driven. The floor plan of the two-story building is U-shaped. One wing is used to manufacture the high-grade desks, while the other wing is in production on the medium-priced line. The trim department for both lines occupies the center section (the connecting bar of the U) on the second floor, and directly under it is the packing and shipping department. All machine work is completed on the first floor; also some assembly work, such as upfitting ends, drawer slides, etc.



Plan and layout on second floor. High-grade desks are finished in left wing; medium-priced desks in right wing.

Easy sanding—remarkable build—improved toughness!

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Opex Sanding Sealer No. 41 *does* save labor and time. In addition, this *improved* sealer helps to build a finish that takes hard knocks without a whimper. Here's the reason: *Opex Sanding Sealer No. 41 has greater solid content.* It builds remarkably well and has a fullness that often permits omission of one coat, without sacrificing results.

There's a lot of satisfaction working with *this* sealer. It dries quickly and reduces sanding time, because it levels out smooth and doesn't plug-up the sandpaper. Jobs, completed, look good and they *stay* looking good even under severe abuse, because Opex Sanding Sealer No. 41 fills properly and blends well with the finishing lacquer.

We have prepared specifications that perhaps will give you some valuable points on sanding sealer practice. We'll gladly send them, together with prices on Opex Sanding Sealer No. 41. Just use the coupon. The Sherwin-Williams Co., 601 Canal Road, N.W., Cleveland, Ohio.

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OPEX LACQUERS

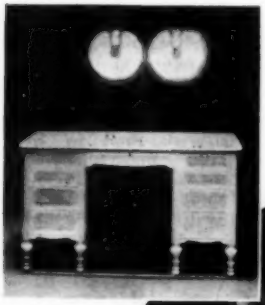
For high-grade desks the general finishing course provides for spray staining followed by drying, sanding, brushing on the filler, and then cleaning off the surplus filler. One of the portable rubbing machines used for rubbing filler appears in Fig. 2.

Then follows two surfacer coats, both sprayed but with a drying interval and sanding operation between coats. The desks are placed in a dry room over night and then sanded, after which the varnish finish coat is sprayed on. After drying over night in the dry room, the desks are placed in clean dry storage space for five days and then rubbed.

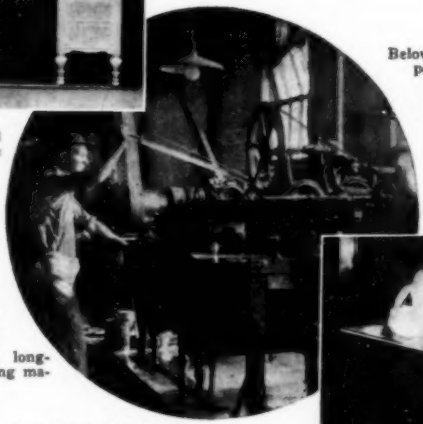
The rubbing operations are performed by machines as much as possible, the long-stroke machine pictured in Fig. 4 being used chiefly for rubbing the tops of large desks. On small surfaces, especially on the tops of typewriter desks which have the center section open, the portable rubbing machine shown in Fig. 5 in used.

Rubbing is done with pumice and oil. The desks are then cleaned and polished and allowed to stand one day before being trimmed with hardware. A feature of these desks is the patented metal lock-strip for locking all drawers in any style of desk. After being trimmed the desks are again polished to make them ready to be packed and shipped.

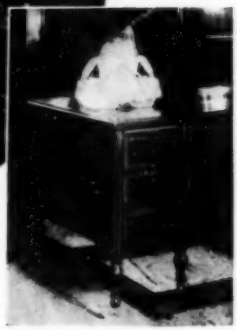
The medium-priced desks in production in the other wing, proceed from the assembly or cabinet shop and, upon entering



Above: Fig. 3—A desk in the spray booth.



In circle: Fig. 4. — Rubbing desk tops at the adjustable, long-stroke rubbing machine.



Below: Fig. 5—The portable rubbing machine is used for smaller surfaces.

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the finishing department, they are spray stained, filled, cleaned and given one coat of surfacer. After a careful sanding of the surface,

Fig. 2—Portable machine for filler rubbing.

the final coat of flat varnish or lacquer is sprayed on; then to the trim department, and ready to be packed and shipped.

This plant has a capacity of 3000 desks per month, with walnut, mahogany and oak predominating.

Airplane Finishers

It is surprising to me to find the extent of consideration that is given the thought among some in the aircraft industry that anyone can finish airplanes. I was surprised and disappointed recently to find a paint manufacturer enhance this theory in a booklet in which I read the statement: "A painter makes a poor doper." The writer of that booklet does not differentiate between the various kinds of painters, therefore I take exception to his statement; I wonder what line of logic was used to arrive at such a deduction and conclusion.

My choice of a good doper is a first-class automobile or railroad painter who has had years of experience in flowing varnish on bodies. It is necessary that the finisher possess that same degree of intelligence as is expected of other men in the allied crafts.

The time has passed when men in the finishing department represent that ratio of intellect which was found in the man who, when asked "What is Indian red made of?" promptly replied "Ground-up Indians."—Dennis O'Brien.

Drake & Son Join Chicago Paint Firms

Mr. Henry G. Drake and his son, Mr. Milton G. Drake, both formerly with the Chicago Varnish Co., Chicago, and the Morgan Co., Peoria, Ill., are now associated with the Enterprise Paint Mfg. Co. and the Federal Varnish Co., Chicago, Ill.

Mr. Henry G. Drake will at once assume his duty of Technical Supervisor of Industrial Paints and Varnishes, and Mr. Milton G. Drake will be connected with the Production Division of these two companies in their industrial paints and varnishes.

Berry Bros. Inc. to Make House Paints Too

House paint, to be placed on sale September first, is the answer of Berry Bros., Inc., Detroit manufacturer, to frequent requests by dealers and master painters for a complete Berry line. Heretofore, the firm has limited its output to varnishes, enamels, lacquers and stains. The new product, to be known as "Berrycraft House Paint," will be manufactured to the high standards of quality maintained by Berry Brothers throughout its 71 years of manufacturing experience. Cards showing assortments of 8, 16 and 32 colors are ready.

Berry Brothers' lacquer division is now installed in the new building recently erected for the purpose. Paint is being manufactured in the old section where lacquers formerly were made.

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3 Hour Drying Wood Filler

This newest Marietta product is made of silex and linseed oil but embodies a new idea in oil treatment heretofore unknown.

The Filler is long working and may be wiped off easily even twenty minutes after application.

IT DRIES TO SAND OR COAT IN THREE HOURS

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THE ADHESIVE STENCIL FOR AIRBRUSHING

How to make and use the adhesive stencil, what kinds of jobs it's suitable for, how long it generally lasts under certain conditions, and what ingredients are included in the adhesive material

By F. S. Araki*

A TRADE-MARK, design, monogram, name, number, etc., can be painted in the finishing room by means of the adhesive stencil and airbrush or sprayer very easily and inexpensively.

There are several ways of doing this sort of work. The foreman must be able to determine at once the most suitable method for any particular job, on hand. An excellent method for one kind of job may not work out with equal advantage for the next one.

Like anything else, the stencil has its limitations, and there are times it cannot be used satisfactorily. For small lots and simple designs, it may not be worth while to cut the stencil. The silk-screen process has a decided advantage on a flat smooth surface, where medium to large quantities of articles are to be marked or decorated.

The decalcomania is just the thing for more complicated work in large quantities and where sufficient amount of time is available. It all depends on the quantity, quality, size, nature of design; also the time allowed to turn out the work.

The comparative merits of various methods cannot be discussed in a few words, so I must pass that on to a later issue of this magazine.

For Small and Medium Runs

Generally speaking, the adhesive stencil is most suited for a small to medium run having rather simple designs. It is less troublesome than the screen process and a great time saver. Whether the stencil is to be made in simple or complex form is left to the foreman who ought to know which is the best in each particular case. But always make at least two or three sets or more, as they can be cut in one operation.

Except for an unusually large size stencil, the adhesive mass is put on the stencil paper or thin cardboard before cutting—usually a day or two in advance. The adhesive mass for the present purpose can be prepared from either:

1—Gelatine Base
2—Gutta Percha Base
3—Non-Drying Oil Base
4—Rubber Base

Each has its own advantages and disadvantages and in this article I shall confine my attention to the rubber-base adhesive mass, as it is conveniently kept and easily handled whenever required.

Take two or three parts of zinc white, one part of Venetian turpen-

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Clear Metal Lacquers
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VALENTINE & COMPANY, 386 Fourth Ave., N. Y. C.

tine* and 8 to 10 parts of rubber cement. Mix well and put away in a collapsible metal tube or tightly-closed bottle for future use.

The reason for not giving here the exact proportion of the material, is due to difficulty of obtaining the standard products from different sources. We buy, in New York, a certain brand of rubber cement inexpensively, but others who are located elsewhere may have to prepare the rubber cement themselves.

Making and Using the Stencil

The adhesive mass is applied with a roller or spread out with the edge of cardboard and left to dry, preferably overnight, before cutting the designs, etc. Spraying should be done with quick-drying material, and allow sufficient time before removing the stencil from the work.

The adhesive mass will not become hard in a hurry, and can be used over and over again. In my experience, when kept in a box, the adhesive stencils could be used again even one month after they had been put away.

When the surface being decorated is smooth and free from dust the stencil should be serviceable perhaps hundreds of times, but a great deal depends on the thickness of the adhesive mass used. For a large run we look for other methods, of course.

Recently we made 100 plaques by using two stencils alternately (in rotation). We used the stencils alternately so that the sprayed lacquer would have time to set before we peeled off the stencil. If it is necessary to peel off the stencil at once, a great deal of care should be exercised so that it will not spoil the register or sharp definition.

When making a large stencil the adhesive mass is used only around the letters or designs in order to save material, yet it will have the masking value desired.

It may be a good plan, when a large run is expected, to rub a little glycerine or olive oil on the front surface side so that any accumulated lacquer can be cleaned off easily.

Here are a couple of tentative formulas for making rubber cement:

Material	Parts		Parts
Fine Para	24		33
Whiting	12		
Litharge	16		6
Sulphur	1¼		3

Number two (right hand column) is more costly and better quality cement. Usually it is used in 1-lb. cut; that is, one pound of the above mixture is dissolved in one gallon of naphtha.

*Fluid to semi-solid in ordinary temperature and a very sticky substance.

Fire Not Serious

Erroneously reported as quite destructive to the Berry Bros., Inc., Detroit factory, the recent fire was in reality minor in character. The damage was confined to a steel shed and amounted to only a few hundreds of dollars. The owner of the adjacent automobile sales lot lost 14 cars, which were parked against the fence near the Berry Brothers' shed.

Strand's Wisconsin Agency

The N. A. Strand & Co., (Mfrs. Flexible Shafts and Equipment) 5001 N. Lincoln St., Chicago, announces: "We have appointed the Western Iron Stores Co., of Milwaukee, Wis., sole agency for our line of flexible shafts and equipment for the State of Wisconsin, effective July 1st, 1929.

"A complete stock of machines, flexible shafts and various attachments will be carried for prompt service to the trade."

Equipment
Materials
Methods
Efficiency
In—

CUSTOM WOOD FINISHING

The what, why, when and how of some interesting equipment and methods employed in a factory that does a variety of custom work and refinishing, wherein production economies and speed must fit in with dependable quality workmanship

By Donald A. Hampson

IN THE FIELD of power transmission, there is a growing impression that the road to efficiency consists in having an open mind in regard to methods of driving—the direct-connected motor being best in many cases, while in others it is desirable to have the motor for individual machines connected by a belt or chain drive; in still other instances either the lineshaft or group drive may be first choice, all things being considered.

Much the same thing is true about finishing. Unless each job is viewed with an open mind, the best method may not be selected. There is no universal method, tool or equipment. On jobbing work and general refinishing, compromises must be made and some method should be adopted which is a sort of panacea. But manufacturing work can be separated as to method and material.

This thought came up when visiting a furniture factory turning out a variety of medium quality products. In one end of the main finishing room was the most cadaverous looking booth you ever saw. Here, a man was spraying hatracks and trees. It was a job for an active man too, as the 6-ft. of height could not be covered by the air brush without considerable stooping and reaching. A turntable coming 15-in. off the floor held the articles being sprayed.

A Portable Sprayer

One would hardly think that the portable sprayers now on the market would be found in a large plant on production work, where air lines run about freely and where extra spray guns are always available. But this plant has one in service. It is used for finishing samples, touching-up and experimental work. Experience has shown however, that its lamp-cord blower is not efficient in regard to spraying all materials, but shows up best where oil stains are used—and this is the work assigned to it.

Dipping; Rubbing

In this plant a partitioned room is used for a dipping department. It is about 12x15-ft. in floor space area and a large tank and drain board extend entirely along one side. One man works at this tank dipping chair frames in the oak stain and racking them on the right and left. A short time is allowed for draining and the frames are then rubbed off by

hand. This completes their finish. A speedier job could hardly be imagined, and the appearance is quite satisfactory. These chairs are later upholstered in a modified over-stuffed style.

Shading

One of the fine things about compressed air equipment is the possibilities in shading. Some center tables in this factory had received their undercoat of red—almost crimson—and the shader was spraying the parts to be made darker. He was doing a beautiful job and working with considerable speed, too. Working alone and handling all his equipment and material, this man was finishing a table complete in 3½ minutes, floor to floor.

Speeded Up Routine

On straight spraying, each sprayman has a helper. Greater production is secured in this way because the gun operator can spray almost continuously. For example, telephone stands are given an undercoat, then a flat color, and then varnish. For each of these in turn, the helper keeps "herding" his raw materials toward the booth, placing the final stand where the operator can pick it up without moving out of his tracks. The helper quickly jumps to the other side of the booth ready to take the coated stand while it is still in the air and carry it to its drying position.

Carvings, a Problem

In this same factory, one of the jobs included the making of a high grade bedroom suite in mahogany. Considerable carving and fluting were used for ornamentation and this necessitated more hand work than on any other product of their manufacture. Seven coats of lacquer were sprayed on but the time saved by spraying was swallowed up in the slow, tedious hand-rubbing operations between each coat.

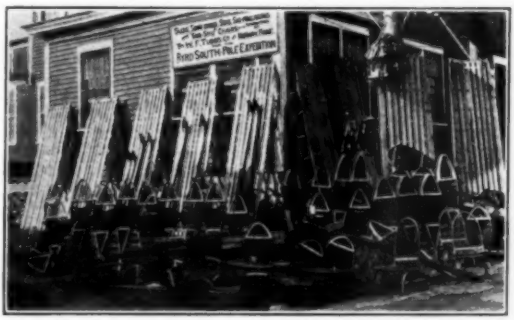
Traced back in the millroom, this same ornamental work added considerable to the production cost. Besides the actual carving itself, there was the sanding, most of which was done by hand. One man on a belt sander was "flowing a limp belt" in and out of the convolutions of the mahogany, using his fingers to guide the belt, said fingers being well taped to save the flesh. Even this is a step in advance—as many old time finishers will tell you in the sign language by holding up their hands, fingers spread, to show the enlarged, calloused places that are caused by long periods of steady rubbing in corners and carvings.

Surely, modern invention has overlooked one trick when it has given us everything else except a method of sanding and rubbing in the "gullies" of irregular surfaces.

Camera Stands of Cherry

An interesting job had been taken on by this factory for a concern making professional cameras, but having no woodworking shop of its own. Those of us who have braved the photographer will recall the cherry redness of the stands, on which the photographer's camera rests. These stands are made principally of cherry. Cherry is strong and traditional with the profession. Its grain raises very little with a water stain. The usual finish consists of one coat of cherry stain sprayed on and followed by one coat of varnish.

A photograph that says more than words about the durability of Murphy materials . . . . . .



We publish here, through the courtesy of the W. F. Tubbs Co. of Norway, Maine, a photograph showing the snow equipment made for the Byrd South Pole Expedition.

NOT everybody is in the fascinating and romantic business of making snow shoes, skis and sleds, but no one who is concerned with the art of finishing can fail to realize how important is the selection of a finish for such articles, particularly when they are for such exacting work as will be their lot on Byrd's Antarctic Expedition.

We point with pride to the fact that the Murphy Varnish Company supplied all of the finishing materials used on the articles shown in the photograph. On the snow shoes and other articles made of raw animal hide, special Murphy finishes were used. In fact the only *standard* Murphy product used was on the skis. All of the finest skis made by the W. F. Tubbs Company are finished with three coats of the famous Murphy Flexible Lacquer.

For all kinds of finishing on all kinds of surfaces the Murphy Varnish Company either already has, or will make up to specification, the right material of the highest possible quality.

Your problems are our business.

MURPHY VARNISH COMPANY
Newark San Francisco Chicago
Essex Varnish Company, Newark
(Associate Company.) *Baking Material Specialists*

Murphy *Flexible* Lacquers

What Caused

A Rough Specked Finish

Smooth tops but dirtspecked sides, which had to be sanded smooth and relacquered, resulted in some interesting disclosures, and emphasized the importance of using clean finishing materials

By W. F. Trahdman

RECENTLY WE were surprised and dismayed to find that minute particles of fine dust specks were imbedded in the sides of 100 cases which had just been finished in lacquer. The tops however had a clean smooth finish. This was the only run that had come through with an imperfect finish. Immediately a discussion arose as to possible causes. Someone advanced the theory that dust from an adjoining room had blown onto the freshly-coated surfaces, but this could not explain the fact that the tops were perfectly smooth and free from specks.

The cases were of a small box-like construction, and had been given a coat of primer, and two or three coats of lacquer. The lacquer plus dust was held to be the cause of it all.

Well, to make these finished cases presentable we decided to sand the sides and spray on an extra coat of lacquer. As soon as we had them sanded, little red and black specks appeared. This was in the primer. Now to find out why! The primer had come in five-gallon cans which had pressed tops. When opened, there was plenty of room for dust to drop in. This probably accounted for the black specks.

The red specks were primer pigment. Evidently the primer had not been thoroughly stirred nor properly strained.

What Happened

In my opinion this is exactly what happened: The can of primer had been left open—perhaps for a long time, maybe for only a minute, but long enough for dust particles to drop into the can opening.

Sometimes when spraying primer, the operator stops stirring if his arm gets tired*; as a result he uses the juice (vehicle) instead of a proper mixture of vehicle and pigment. As the amount of vehicle in the can diminishes, the pigment has to practically "go it alone." In other words the remaining primer has insufficient vehicle, but an excessive amount of pigment. When it comes to straining, specks of pigment go through the strainer and into the spray cup, or the operator may force the pigment through the strainer with a knife or stick to hurry it along.

Proof of this procedure may be seen by noticing the gloss in some primers. Open a new can and use it from day to day. If it was meant to dry to an eggshell gloss, you may find that the material first used from the can shows up quite glossy when it dries, but as the bottom is neared the primer begins to show dull. Soon you

*Preferred practice calls for the use of a power-driven (air or electric motor) agitator for this purpose.

Test it yourself

send coupon to-day for this Trial Offer Quart of

LINGERWETT REMOVER

and prove its *extra* value in actual work

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Gentlemen: I want to try Lingerwett Remover, at no risk. Send me one quart with bill. If I like it, I will pay the bill. If I don't, I will return the bill unpaid.

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Thousands of men concerned with painting or refinishing all kinds of wood or metal surfaces consider Lingerwett Remover superior to any other method.

Many thousands have not yet tried it. That is why we make such a wide-open Trial Offer. We want *you* to know the full benefits of using Lingerwett Remover—and at no risk.

We can tell you in advance, however, that Lingerwett will give you very different results, for the simple reason that it is a very different remover.

Lingerwett goes right through the heart of paint, varnish, shellac, enamel or lacquer—not just one, two or three coats, but many coats, 5, 10, 15 or more coats.

Lingerwett does its work all the way from a few minutes down to *instantly*.

Lingerwett does not change the surface to a sticky, slimy, gummy mass that is exasperating to clean up, but to a soft, mushy, sludge which is easily wiped up. By comparison with other removers, it's almost child's play to use Lingerwett.

Lingerwett, as its name implies, dries very slowly. The protective film that forms over it will actually keep it wet *overnight*.

Lingerwett doesn't hurt the hands or eyes, doesn't raise the grain of wood—doesn't do anything you don't want a remover to do. And it does everything you ever hoped a remover could do.

We urge that you take full advantage of the Trial Offer as stated in the coupon. Send the coupon *now*. You have everything to gain and nothing to lose.

THE WILSON-IMPERIAL COMPANY
115 Chestnut Street
Newark, N. J.

Buy Lingerwett from your dealer or send coupon for trial quart — NOW while you think of it

will see a flat finish—and pigment to the depth of about an inch remains in the bottom of the can after the liquid is all used up.

Lacquer for this same job (mentioned in preceding paragraphs) came in a can with a small corked opening at the top. Even if this had been left open, very little foreign matter could have entered the can.

Heavy Coats Bury Defects

Anyone who has sprayed lacquer knows that a much heavier coat can be put on a flat level surface than on a vertical surface. The sides of these cases could not be sprayed as heavily as the tops, consequently on the sides the dirt specks protruded from the final finish which held them there. But the tops were literally flooded, and this buried the dirt specks. This is an old trick in flowing—burying the dirt with an extra heavy coat—but to do it successfully, the spray operator must know his business, particularly in judging how heavy to flow on the lacquer or varnish in order to successfully bury the foreign particles.

Keep Materials Clean

Perhaps some readers will exclaim; "Old stuff, I knew that long ago!" Sure; it's not a new experience to some oldtimers, but there are always beginners who don't know everything, and besides the fundamentals of painting and finishing are practically the same today as they were years ago. In conclusion, my advice and warning is: Keep all cans of material covered, stir thoroughly and strain the material before using it, and stir or agitate all pigmented materials while using them.

Why Ceilings Sweat

Revealing specifically what reactions take place under both natural and artificial conditions, when changes or variations occur in the circulation, temperature or moisture content of the air inside or outside the building

By W. F. Schaphorst, M. E.

MUCH MONEY is unnecessarily lost every year due to ceiling sweat. There should be no such losses, because they can be easily prevented in any building by proper insulation.

I believe that if the cause of ceiling sweat were better understood and if the necessity of correct insulation were fully explained, owners and officials would one and all see to it that roofs would be made immune to sweating.

There is no mystery about this subject. Just a few minutes study and every reader will know why ceilings sweat, and why a properly-insulated ceiling will never give trouble in this respect.

Where does the sweat come from? It comes from the air. Perfectly dry air does not exist in nature. There is moisture in the air over Sahara and over the north pole. Therefore, to understand ceiling sweat it is necessary to become acquainted with the

Open Your Doors Now to Efficiency, Economy and Speed!

Haskins R B 6 Equipment

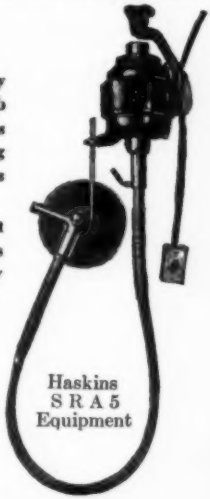
For polishing, rubbing or grinding—on flat surfaces or curved—in places easy to get at or ordinarily inaccessible—HASKINS Flexible Shaft Equipment will do the work more efficiently, more economically and in less time.

What does this mean to you? Just this. By reducing the time necessary to do a given job *labor costs go down.* By increasing output *profits go up.* Finally, by offering work of outstanding merit at a more attractive figure *business that has been going elsewhere comes to you!*

Thus HASKINS equipment represents a profit opportunity that many foresighted manufacturers are availing themselves of. Not only can they meet present competition successfully—they have also safeguarded their future.

HASKINS Equipments are used for Polishing Rubbing Sanding Grinding Brushing Etc.

You will, of course, wish to inform yourself fully about HASKINS Equipment. Write for descriptive literature.



Haskins SRA5 Equipment

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properties of air in three forms: dry, saturated, and humid.

Air Conditions

Dry air is air that is entirely void of moisture. Perfectly dry air must be made dry artificially—by mechanical or chemical processes. For example, air can be made dry by substances that have great affinity for water such as chloride of calcium, sulphuric acid, and unslacked lime.

Saturated air is air that contains as much moisture as it can possibly hold at any given temperature. During rainstorms air is generally so completely saturated that clothes hung in sheltered spots to dry will not become dry because the air is "100% wet." It is obvious that air must be at least somewhat dry before it will absorb moisture from wet clothes.

Humid air is any air that contains moisture. Thus saturated air is humid air, but humid air is not necessarily saturated. Air containing any degree of moisture above absolute dryness is humid air.

Relative Humidity is the "percentage of saturation." For example, a given amount of air when "saturated" will hold 1-lb. of water. However if it is found that it contains only ½-lb. of water, the "relative humidity" is 50 percent. If it contains .25-lb. of water the relative humidity is 25 percent; .75-lb. water, 75 percent, etc. In other words, divide the weight of water actually in the air by the weight it will hold when saturated and you have the relative humidity.

That, surely, is simple enough so that anybody can understand it. Probably the words "relative humidity" sound too complex. It might be better understood if it were called "percentage of maximum moisture."

Warm air will hold more water than cold air. That is why heating clothes makes the clothes dry. The heat warms the air and the air absorbs the moisture from the clothes.

What Causes Rain

Let us suppose that the air a mile above the earth is "saturated," and that its temperature is 60-deg. F. The slightest drop in temperature will cause rain, because the cooler air cannot hold so much moisture.

Let us now suppose that the air one-half mile lower down has

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PENT-ACETATE
Best of the High-Boiling Lacquer Solvents
Pent-Acetate is representative of the highest purity and uniformity in the class of accepted higher boilers. Its purity enables the lacquer formulator using Pent-Acetate to employ a wider range and variety of other solvents in blending, and by such blending substantially reduce his production costs.
Standardize on PENT-ACETATE—pure amyl acetate—for safe and unvarying lacquer formulation.
The SHARPLES SOLVENTS Corp.
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501A FIFTH AVENUE, NEW YORK

a relative humidity of 50 percent, and that its temperature is 60-deg. F. As the rain passes into this dryer and warmer air it will be re-absorbed and will not reach the earth. Rainstorms of that kind frequently occur high up in the air. No doubt every reader has seen them as they are visible very often. In order that rain may reach the earth, conditions must be such that all of the water will not be re-absorbed into the air during the descent of the water toward the earth.

Moisture Deposits

It is now easy to understand why a pitcher of ice water invariably becomes covered with dew. The thin film of air surrounding the pitcher becomes cooled to such an extent that it is cooled below the saturation point and moisture must, of course, be given up. But when the temperature of the water in the pitcher is not low enough to bring the temperature of the air film down to the saturation point—then there is no deposit of dew. This explains why water particles never collect on a warm or hot pitcher.

Nature's Humidity Control

Nature presents some very interesting and striking examples of what might be called "humidity control." Surrounding the plateau of Tibet, for instance, we have the highest mountains in the world. At the tops of these mountains the temperature is intensely cold throughout the year. Across these mountains comes air of high relative humidity blown from the valleys of Asia. As a result, practically all of the moisture in the air is deposited on the mountain peaks and there is none left to fall as rain on the Tibetan plateau, hence its extreme aridness. In the summer it is exceedingly hot and dry, and in the winter intensely cold and dry with practically no rain or snow at any time. The above explains "why."

Mechanical Refrigeration

Similarly, in a room cooled by mechanical refrigeration, we have pipe coils of very low temperature. Warm air carrying moisture rises, envelopes the pipes, is cooled, deposits moisture on the pipes where it freezes and forms *frost*. The cooled air then drops and makes way for other warm moist air moving upward. In other words, circulation of air is established.

Naturally, as this circulation continues, the relative humidity of the air becomes less and less—provided the room is kept closed. Eventually the air will become practically *perfectly dry*—all moisture adhering to the pipes in the form of frost. In fact, one objection to mechanical refrigeration is that the air becomes so dry that fruits, meats, vegetables,

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cheese, eggs, etc., give up moisture and may diminish in weight to a serious extent.

In view of the above, since warm air can carry more moisture than can cold air, it is plain that warm air is more liable to give trouble from sweating than is cold air.

Direction of Air Currents

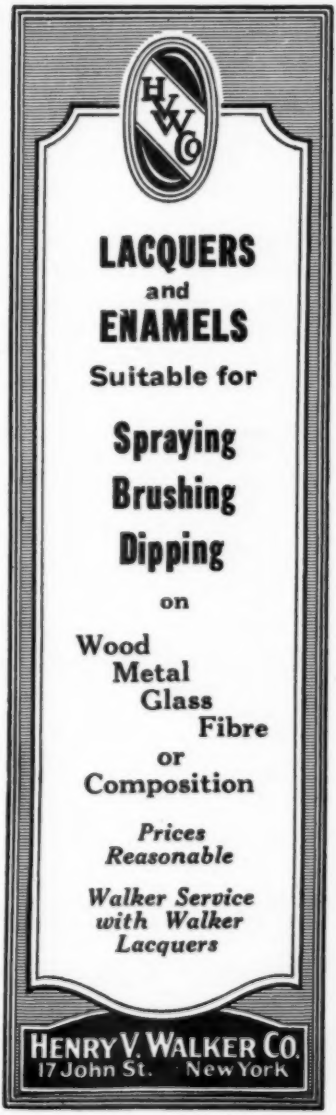
Another characteristic of warm air is that its tendency is to move upward, because it is lighter than cold air. This explains why warm air, containing more moisture than the other air in the room, moves to the very top of the room and comes in contact with the ceiling. If the ceiling is cold enough, precipitation will always occur, and if there is no insulation between the roof and ceiling to keep the cold out, precipitation will continue indefinitely. As long as the ceiling is cold enough to cause the precipitation to continue, drops will form and there will be dripping.

Side Wall Sweating

Sweating on cold side walls is less serious than on cold ceiling because the average air in contact with the side walls contains less moisture, and besides, instead of dripping from side walls the sweat simply clings to the side walls as it runs down in streaks. This explains why it is more important to insulate ceilings than side walls.

Insulation; Cork

To be sure, there is no such thing as a "perfect" roof insulator. A perfect insulator would permanently keep out every bit of cold. Or, in other words, a perfect insulator would never permit the passage of a single B. t. u. of heat.



Is Pure Shellac Always Pure?

The percentage of Shellac Gum used is undoubtedly pure, but what about materials such as Rosin and other Alcohol soluble gums? Why not insist on protection against this form of adulteration? The following warranty is your protection.

"We guarantee the material in this package to be strictly pure Shellac Varnish, composed of Shellac Gum cut four pounds to the gallon in No. 1 Special Denatured Alcohol 190 Proof, and to be free from Rosin, added Wax, excess moisture, dirt, or other adulteration.

Clean as a Hound's Tooth"

If it were possible to make this guarantee stronger we would gladly do it.

Try Strictly Pure Shellac Just Once—You'll Always Use It.

Look for our guarantee label on the package. Prices on request.

Barrett Varnish Company

1532 South 50th Court Cicero, Ill.

When a roof is properly insulated, cold cannot get through to the ceiling below. Hence the temperature of the ceiling of the room is always exactly the same as the temperature of the warm strata of air at the top of the room. Therefore, for reasons I believe I have fully explained, there can be no precipitation, no sweating, and no dripping.

There are numerous roof insulating materials on the market. Pure cork board is generally acknowledged to be the best, although its first cost is highest. Cork is one of the lightest materials known. It is strong in tension and compression. It lasts indefinitely. It burns with such difficulty that it is practically fireproof. And by covering with tar, it is easily kept absolutely dry so that it insulates the roof permanently and with maximum efficiency.

Magic Style

To do a thing as nobody else could have done it—if you can wrench that out of yourself—is style. Beauty is well enough, but I think I have found out that truth is greater than that, and any room or shop window or business letter that is honestly drawn from the burning center of someone's belief, and not from the general vat of what everybody else does and thinks, has magic in it.—Madge Jenison.

In the day of the airplane, universal machine utility and the city cliff-dwellers, it is a natural occurrence that a new art should follow to express and portray the exhilaration and zest of this strenuous, high-tensioned business of living as we have it today.

FIRE AND HEALTH HAZARDS

What a foreman finisher suggests and recommends to reduce to a minimum the fire and explosion hazards which may be present or develop in connection with the use of spray finishing equipment and pyroxylin lacquer materials

By E. B. Smethers

WHILE the use of lacquers and spray-finishing equipment has served to increase production and reduce finishing costs—at the same time resulting in a better quality of finish—it has also made necessary the employment of more care in connection with the fire hazards resulting therefrom.

Through insurance, the user of lacquers and spray equipment knows he is able to bear the loss of his building, machinery, etc.—which might be caused by a fire or explosion—but where is adequate compensation for the curtailment of production for a period of time? However, if the management knows eveything is being done that is possible, the minds of those concerned are relieved of worry to a certain extent.

Every workman in the factory should be as much interested in decreasing fire risks as the employer, because such a disaster as a fire or explosion usually means a loss of jobs and possibly serious injuries. A valuable aid in minimizing such hazards is to impress the men with this fact.

During four years of spraying pyroxylin materials, we at first used methods of cleaning, etc., that could have resulted in serious fires or explosions and probably in the loss of life—merely because of our lack of information on this subject. Inadequate ventilating systems could have caused serious consequences. We are now carefully guarding against any such disaster by using more efficient ventilating equipment, and we have a cleaning schedule that insures greater safety.

Design of Booths

I will not go into details regarding the design and construction of spray booths, exhaust systems, etc., because in most cases this should be left to the manufacturers of such equipment. The designing engineers are better qualified to take care of this problem in the most efficient manner.

Our experience has proved conclusively that home-made spray booths do not function nearly as efficiently as those designed by experts in this business. The spray booth must be large enough and the exhaust sufficient to remove the fumes through the regular piping so that none will escape into the room.

A system for admitting fresh air must be carefully worked out. It is very easy to create back drafts by admitting fresh air through windows only, thus decreasing the efficiency of the exhausting system and allowing vapors to escape into the room.

Room Ventilation

I have been in finishing rooms that were tightly closed, no means

THE finishing foreman who specifies J-W-F products knows that he can depend upon them to produce the same high standard results time after time. He is sure that every gallon will be up to specifications—that the finished job will show the same satisfying quality. Moreover, he knows that when he is up against a tough assignment he can call upon this oganization of finish experts to supply the proper finish—or develop one especially to meet his individual needs. Finishing is never a problem.

Compare J-W-F products with any you are now using. Test them under actual finishing room conditions—and you will learn why they enjoy such widespread popularity. Inquiries are always welcomed.

[Jamestown Wood Finishing Co. products are guaranteed. If they will not do for you what we claim for them your money will be refunded.]

Stains — Fillers — Shellacs
Varnishes — Lacquers — Enamels

Jamestown Wood Finishing Company

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Bristol, Conn. Lenoir, N. C.
Milwaukee, Wis. New York City

being provided for admitting fresh air. Certainly the workmen are not able to put forth their best efforts under such conditions. But a poorly ventilated room is only one reason for higher production costs. Labor turnover is necessarily much higher. Men are not inclined to work under such poor conditions for any great length of time.

Again, where the only means of ventilation is for someone to open or close a window, controversies arise among the workmen. The healthier and more hardy men may feel comfortable with a window open, while others may feel chilly and very uncomfortable.

Cleanliness Reduces Hazards

The importance of cleanliness in a finish room cannot be overemphasized. Compare the finishing room to a U. S. battleship. Perhaps it would not be practical to scrub our floors and clean our equipment as often, but we can keep things very nearly shipshape. The best housekeeper I ever saw was an ex-sailor.

In our establishment one man is assigned the task of cleaning. He has his daily routine to perform, but the bulk of his work is done after the closing hour. The spray operators clean their own guns and containers, but the clean-up man wets down the ducts, etc., and scrapes them with a bronze scraper made for this purpose. Air pressure is not used for removing spray dust. This method can prove disastrous if continued.

All dust and dirt accumulations are removed from around motors and steam pipes. Piles of refuse are not allowed to remain on the floors for any length of time. This waste material is placed in a covered galvanized can, and taken out where it can be safely burned.

We have been advised never to burn spray dust under a boiler, as there is danger of an explosion.

Besides reducing fire hazards to a minimum, this program of cleanliness insures more and better work. Workmen feel more like starting in on a big day's work when they have cheerful surroundings and all obstacles are removed. This is especially the case with men of limited will power. The greatest production can be obtained only by giving workmen the greatest incentive and removing all obstructions.

Electrical Grounding

Too much stress cannot be placed on the electrical grounding of all metal equipment. All booths and motors should be adequately grounded. All drums containing volatile materials that must be kept in the finishing room are grounded as are also the containers receiving the material. This grounding of every container, no matter how small it is, must be thoroughly impressed upon the minds of all workmen or they will be tempted to use it without grounding.

The method of grounding portable equipment must be simple. Our drums are grounded to a return pipe in our steam system. Clips with strong springs and saw teeth to insure perfect contact are soldered to a heavily insulated copper wire, thereby making it a simple matter to snap the ground wire on or off when replacing drums. For grounding the receiving receptacle we use a wire about 3-ft. long with a snap on each end. The workman snaps one end to the drum, after which it is a very simple matter to snap the other end to the container receiving the material.

Smoking is prohibited and signs

The Blue Knight's Column

TO ELIMINATE the waste caused by jellying and discoloration of bronze lacquers now in use, the operator must stop from time to time in his spraying to mix small, fresh batches of bronze powders in the bronzing lacquer. The new Roxalin Bronzing Lacquer, however, enables the operator to make up a batch sufficient to last him for the entire day's spraying without change. Where large quantities are used, the bronze powder and bronzing lacquer can be put into agitated pressure containers, and the spraying can proceed throughout the day, and, in addition, perfect one coat adhesion directly on most metals!

At the end of the day, if anything is left over, it is still usable through the entire following day! With the new Roxalin Bronzing Lacquer, no jellying—no discoloration—can take place within thirty-six hours.

Two full working days from one batch of bronzing lacquer speeds up your entire schedule. The new bronzing lacquer delays for thirty-six hours the inevitable jelly formation or discoloration due to the interaction of the bronze powder and bronzing lacquer, without any loss in finishing qualities.

Complete research bulletin No. 26 will be gladly sent on request. Write to our technical service department.

The Blue Knight

ROXALIN FLEXIBLE LACQUER COMPANY
NINTH AVENUE
LONG ISLAND CITY

Cost Figures

◆

How do you figure your finishing costs? Do you guess at the price per article or do you figure accurately by the square foot?

More difference than you think! May we help you?

BRADLEY-HURTZ CO.

2626 S. Dearborn St.
Chicago, Ill.

ENAMELS LACQUERS INDUSTRIAL PAINTS VARNISHES

to this effect are placed in conspicuous places. Only safety matches are permitted to be brought into the spray room or left in the workmen's clothing.

Buckets of sand and fire extinguishers have been placed in positions where they can be readily used in case of need.

Keep Old Customers

Most sales managers pride themselves on being able constantly to add new accounts, but few of them seem to realize that the costliest thing in business is turnover in customers. New customers are of course to be desired but periodic analysis of inactive accounts will tell you many interesting facts about your business. It should prove easier to keep your old customers than to add new ones; since you won their interest once with the quality of your goods and service and your methods of doing business. They are not an unknown quantity to you like a new customer usually is.

The finish comes in for some critical estimation when it is displayed in the shop window whether on Fifth Avenue or Main Street.

Clark H. Bennett Joins Standard Varnish Works

Effective September first, Clark H. Bennett becomes associated with the Chicago unit of the Standard Varnish Works in an executive and technical capacity.

Mr. Bennett's history is as follows:

With Wadsworth Howland 17 years; worked through the factory up to the position of superintendent and buyer.

With Cawley Clark Co. four years in a sales capacity

President of the Bennett Varnish Co. eight years

In charge of the Chicago plant of Philip Ruxton, Inc. four years and for the past four years has represented K. & S. Co. of Dayton, Ohio in a sales capacity.

Grain Reproduction and solid color baked finishes for—

STEEL RADIATOR COVERS

A trip through the plant of Trico Inc., reveals interesting equipment and production methods employed in the cleaning, prime coating, decorating, bake finishing and final packing of pressed-steel radiator covers

By J. B. Nealey

TODAY BEAUTY is recognized as a powerful factor in widening markets for many products, the automobile being one notable example, and metal furniture another. While steel is essentially utilitarian, there are still many markets that could be won were the utility combined with beauty.

In one instance, at least, an entirely new product has been developed, a demand created for it and an industry built up on this demand. This is the metal radiator cover which might be classified with metal furniture. The greatest merchandising factor for this item is beauty, for in the finest examples the forms of these covers recall the decorative motifs of certain period styles. Effects of wood grain and colors, together with panel designs, allow these covers to harmonize with any type of interior or color scheme.

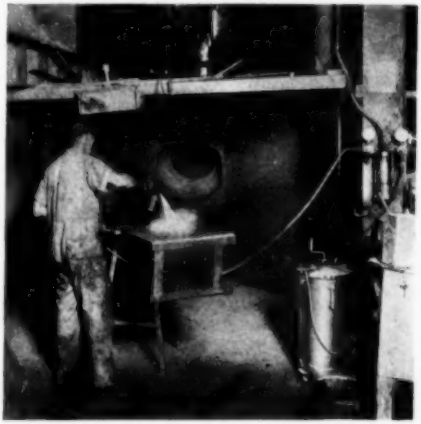
DeLuxe enclosure installation, showing woven cane grille panels

These covers are designed to conceal the unsightly radiator, humidify the air and eliminate wall smudge, but it has been necessary to beautify them in order to sell them. So far has this idea been carried out that the schemes of interior decoration, woodwork, finish and wall color treatments of individual homes and buildings are closely reproduced in cover designs and colors, so as to harmonize perfectly. Some of the grill designs are imported from abroad.

While today there are many manufacturers of metal radiator covers, probably the pioneer in the industry is Trico Inc., of Chicago, makers of Trico radiator furniture. This concern is the largest in its field today, and in addition makes bathroom cabinets, clothes hampers, and many other articles of pressed metal.

Sheet steel, 14-gauge, is the base material;

this is cut to proper sizes by power shears. The sheets are then piled on waist-high push trucks and delivered to the heavy brakes where they are formed into the required shapes by special dies. Punch presses are employed for notching out corners, stamping out small sections, flanging, etc. The parts are welded together, spot welding and oxy-acetylene both being used. All parts being fabricated and completed, they are then trucked to the assembly department where they are assembled ready for the finishers.



At the spray booth; notice portable pressure drum at right

All orders are grouped into schedules according to finish—for example, wood grain, marble, plain color, mottled, inlays, etc.—and any one of these schedules may carry from 50 to 250 different kinds of finishes. Any one unit may have as high as 12 coats of enamel. Since rust is detrimental to finishes, all steel surfaces are kept oiled until they are ready to be prepared for finishing; then the oil must be completely removed before the finish is applied.

Cleaning; Priming

Washing in naphtha eliminates most of the oil, and the remainder is removed with mechanical sanders. Even with the best of care there is always a little oil left, therefore the prime coat must be elastic enough to absorb this, and still stick to the metal. This prime coat is made up according to a special formula developed in the laboratories of this concern.

The cost of cleaning some of the grilled panels amounts to ten per cent of the entire cost of manufacture.

The prime coat and various other coats of enamel are each sprayed on, a long line of spray booths being provided for this purpose. Each coat is then baked in specially constructed gas ovens, after which the surfaces are carefully hand rubbed and smoothed. Any low spots or scratches are filled by the filler coat. This first coat is then baked and the work is moved to the sanding department where the surfaces are carefully smoothed down and made ready for the next coat.

Color Mixing; Graining

One of the most important phases in the manufacture of these covers is accomplished in the color mixing department where every conceivable kind, quality, mixture and color of paint, enamel, japan, etc., is at hand. Every kind of finish is matched, and this on steel. In order to

The only oven that can be built up to any height without any injury to panels. Can be quickly taken down or re-assembled in any location.

Post and Beam Construction affords maximum strength with minimum weight.

Ease of erection effects substantial savings in time and labor.

An entirely new measure of economy in oven construction and practice is being secured with the patented Sadwith Panels. Write to our engineering department for complete description and details.

NICHOLS PRODUCTS CORPORATION

12953 Greeley Ave. Detroit, Mich.

CLEVELAND NEW YORK PORTLAND, ORE.

Western Representatives — Continental Industrial Engineers, Inc. — Chicago

Placing spray-finished radiator covers on shelves in the oven where the finish is to be baked.

make these matches perfect, the colors for trial are put on small panels and then baked at various temperatures for varying periods of time.

This baking process is one of the most delicate and exacting operations in the entire plant, as the baked colors will vary in tint or shade with the degree of heat and duration of baking time. When the proper heat cycle is determined for the particular work in hand, it is carefully noted and faithfully followed for the remainder of that order.

Craftsmen of a high order are employed in the hand graining department wherein the reproductions include any and all kinds of wood grains used for interior trim, for example, mahogany, walnut, maple, birch, oak, cherry, etc. Or one may find here faithful reproductions of Italian and other marbles, glazes, inlays, mottles and many other decorative finishes or effects known to the interior decorating profession. To remove the sheen and give the finish the right tone, the surfaces are subjected to a final hand rubbing with pumice and oil, or pumice and water, depending upon the type of finish. No machine graining is employed.

Baking Ovens

As before mentioned, the baking process is one of the most sensitive and exacting, and calls for very accurate temperature control—for a change of color comes with the least variation in heat. These ovens of which there are seven, are constructed of sheet metal and completely insulated. Each oven is 15-ft. long, 12-ft. wide and 8-ft. high. Swinging doors are provided in front through which the work is charged on racks mounted on trucks. Temperatures used on various kinds of work vary all the way from 250 to 300-deg. F., and there is also a wide range in heating periods. Temperature evenness is checked with recording pyrometers which provide a permanent record of every slight variation.

Packing

As there is no uniformity in the sizes of the product shipped, a

A loaded multiple-deck truck being advanced into the oven where the finish on radiator cover parts is to be baked.

Established — Armitage ARMORLAC LACQUERS VARNISHES ENAMELS — *Since 1876*

A R X

Metal Primer

for use under lacquers or enamels

Bakes in

One Hour

at 225 Fahrenheit

The most *adhesive, toughest* primer ever made! It becomes part of the metal itself.

Made in Colors and White

Pin the Coupon to your Letterhead for complete Details

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Newark, N. J.

John L. Armitage & Co.
Newark, N. J.
Gentlemen:

Send us details of your A R X Metal Primer as advertised in INDUSTRIAL FINISHING.

Firm_____

Street_____

City_____ State_____

Kindly mention INDUSTRIAL FINISHING when writing advertisers

crate-making factory is also maintained. The "piano" finish must be carefully protected by cotton packing material so that it will carry safely to any part of the country without danger of scratching or rubbing.

Economical Metal Cleaning

How far can the manual operations in metal cleaning be eliminated by the use of mechanical means? The more a machine can do to replace hand labor, the lower the manufacturing cost will be. Consider, for an example, the cleaning of small-size articles for spraying—articles that are scheduled so that thousands are finished per day.

In some plants the men who do the cleaning take the cleaning basket or frames loaded with articles to be cleaned, dip them in one tank, rush to the next, and so on through the cleaning operations. Then perhaps they swing and shake the basket to remove as much rinse water as possible before placing the articles in the dryer. The application of mechanical dipping, shaking and drying devices for this work would save considerable labor costs and at the same time produce more thorough cleaning.—Platt.

Synthetic Pearl Essence Finishing Material

Technical Director of the Celluloid Corporation* calls attention to the beauty of pearl essence finishes and tells of the successful laboratory development of a synthetic pearl essence which is now very popular

By James F. Walsh

PEARL EFFECTS have enjoyed much popularity in toilet articles for the past three or four years. Formerly limited to jewelry articles, these pearl effects have found extensive use in pyroxylin plastics, principally due to the fact that a manufacturer of celluloid products succeeded in developing a *synthetic pearl essence* capable of producing practically all the effects of natural fish essence at an economical price.

Today this essence is finding new uses in almost every field where decorative and novel effects have an appeal. Leather goods, bathroom fixtures, cameras, musical instruments, radio cabinets, refrigerators, panels, clock cases, furniture and similar articles are examples of the diverse uses to which this essence is being applied.

Five years ago this essence was very expensive, selling as high as $500 per pound on the dry basis of the scales. Despite this almost prohibitive cost, the use of such scales in thermo-plastic materials, lacquers and dopes was seriously considered. By incorporation of the essence in either pyroxylin dope or a kneaded mass and by subsequent spraying, dipping, casting or extruding, artistic nacreous effects were produced in the finished products.

*290 Ferry St., Newark, N.J.

The flying squirrel's flight . . . sometimes as great a distance as eighty yards . . . is remarkable.

SPACE
bars the way!

A frisky squirrel cautiously eyes the distant limb . . . turns . . . scampers back. *Space bars the way!*

Heat is likewise halted . . . held to its intended work within Swartwout Metal Insulated Ovens by the Swartwout Stop-Gap Joint.

A truly remarkable feature, found only in Swartwout Ovens, this joint lays a series of insulated gaps between inside and outside walls, as well as between panels. So effective is it in eliminating heat transmission that a hand can be placed against the outside oven walls without discomfort.

Naturally, in the limits of an advertising page, the many time, labor and fuel economies provided by Swartwout Ovens cannot be fully described. A Swartwout Engineer, however, can present the complete facts in a brief thirty minutes if you so request.

This Swartwout Continuous Conveyor Oven is used by a well-known automobile producer.

THE SWARTWOUT COMPANY · *18511 Euclid Avenue* · *Cleveland, Ohio*

Swartwout Metal Insulated Ovens

Heat cannot jump the Swartwout Stop-Gap Joint

Executives interested in checking oven efficiencies are invited to write for the Oven Test Blue Print.

Thus from the making of small articles, such as pearls, buttons, etc., the use of fish scales extended to the making of manicure and toilet sets, fancy umbrella handles, fountain pens, veneering of furniture, coating of leather, electrical equipment, etc.

The demand, originally considered a mere fad, grew enormously and today is an important factor in the plastic and lacquer industry. Much of this growth took place despite the high cost of the essence.

But "necessity is the mother of invention." The chemist was called upon to produce an artificial essence in the laboratory that would possess all the characteristics of the natural product.

The requirements were many:

1—The scales were to be made from chemicals readily obtainable and inexpensive in character.

2—The process was to be simple and economic.

3—The yield or output was to be fairly large.

4—The resulting scales were to imitate the fish scales in fineness and silkiness.

5—The silver luster and color were to be equally as brilliant.

6—The scales were to be insoluble and unaffected by the usual organic menstrua employed.

7—The compound should be neutral and inert in its action.

8—It should be toxicologically harmless.

9—It should be stable to light and heat.

These specifications or rather limitations appeared drastic and insurmountable, especially in view of the meager disclosures in the literature and patents. Like the proud peacock, the envied silvery fish reigned supreme, with no satisfactory substitute to mar its horizon. In consequence the cost of the essence remained high, which in turn was reflected in the higher cost of articles in which it was used.

The ingenuity of the chemist was challenged and with full knowledge of the requirements he set to work in the laboratory. The search ended successfully after hundreds of test-tube experiments; after exploitation of innumerable chemicals and reactions.

Silvery liquid mercury furnished the idea. But how this metallic-appearing heavy liquid could be transformed into light, minute, shining, inert scales, displaying the characteristics listed above, was the chemist's task. Suffice it to say that this firm succeeded after considerable experimentation, in producing a compound of mercury, none other than mercurous chloride, in a nacreous or scintillating form.

Chemically this compound is the same as calomel sold in drug stores and often prescribed by doctors for infant's use, etc. But the calomel in the drug store is "dead." It has no luster, does not appear crystalline, and looks like thousands of other plain white amorphous powders. How this same chemical could be made commercially into a form to imitate the scales of fish sounds like romance to the layman.

The compound was termed *H-Scale*, the *H* being the initial of *Hydrargyrum*, the Latin word for mercury. The substance, original in concept and application has been fully protected by patent applications made by William G. Lindsay.

The result of this important discovery was far reaching. The cost of the pearl articles immediately dropped. The demand grew larger, the applications ex-

Industrial FESCO *Finishes*

for Metal and Wood

OLIVE GREEN ENAMELS AND GROUND COATS
RUBBING AND FLAT DRYING VARNISHES
CLEAR AND COLORED LACQUERS
UNDERCOATERS FOR LACQUERS

Manufactured in one of the most modern plants in the Industry.
If you have a finishing problem let us help you solve it.
One of our practical men will call at your invitation.

The Ferbert-Schorndorfer Co.
Cleveland, Ohio

To accurately predetermine the life of finishes, use the

"Weather-Ometer"

Make sure of the durability of your finished product in any locality, in- or out-of-doors, by testing your finishing materials with this accelerated weather testing cabinet. A thoroughly practical apparatus for tests on paint, varnish, lacquer, bitumens, etc.

Made in three models and three types.
Particulars on request.

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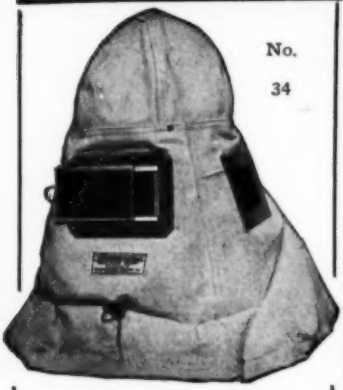

Strong Enough to withstand the blow of Steel Shot!

PULMOSAN Sand Blast Helmet No. 34. A tough, practical helmet of 12-oz. Army duck, yet *comfortably light*.
Furnished with wire screen or glass fronts (as specified). Fronts can be removed without discarding helmet.

Send Coupon for Details of this and other types

PULMOSAN
SAFETY EQUIPMENT CORP.

174 Johnson St. Brooklyn, N. Y.
Kindly send details of your Sand Blast Helmets.

NAME .....
FIRM .....
ADDRESS .....

tended, and today it is manufactured in large quantities.

Before its adoption by the public, extensive tests were made to ascertain its properties, i. e. its chemical inertness and purity, its stability to light and heat, and above all its physiological effects. Incorporated in and protected by an insoluble colloid, such as celluloid, and the very small quantities in which it is used, its action, if any, can be regarded as negligible. Nevertheless, samples of H-Scale were submitted to determine its toxicological effects, and after elaborate and exhaustive experiments were made it was proved definitely that the compound as manufactured was inert and harmless in character.

Its applications immediately expanded, its sales increased and the demand today has grown to such an extent as to necessitate a production plant of fair size.

The fine silvery scales are supplied in many different forms:

1—Suspended in water, glycerine, etc.

2—Suspended in organic solvents, such as alcohol, butyl acetate, turpentine, "Cellosolve."

3—Suspended in either pyroxylin or cellulose acetate dope.

Thus it is seen how the chemist answers the call of the public, how he faces optimistically the requirements set before him and how after patient and laborious investigations he issues forth from his laboratory triumphant, and grateful that necessity prompted him to newer fields of chemical endeavor and achievements.

The production of imitation mother of pearl by purely chemical means marks another chapter in man's attempt to duplicate the handiwork of Nature.

Longer life for wiping rags

WHEN wiping rags are dirty enough to throw away—don't do it! Instead, wash them with Oakite, at a cost, including labor, of no more than 2c a pound.

Oakite cleaning will remove all grease, oil and dirt, and leave rags as absorbent as new. This process of reclamation can be repeated time and again, so that replacement is necessary only when rags are actually worn out.

This is only one of the economies of Oakite cleaning. Let our near-by Service Man tell you about the many other savings in time, money and effort that can be effected by the use of Oakite materials in the finishing shop.

Manufactured only by
OAKITE PRODUCTS, INC., 32 F THAMES ST., NEW YORK, N. Y.

OAKITE
Industrial Cleaning Materials and Methods

You'll Stick to JONFLEX TAPE
the way it sticks to the job

once you try the FREE SAMPLE

JONFLEX Industrial Tape, for masking jobs, newest product of the Johnson & Johnson laboratories, will make fast friends with your operators. No processing. No coaxing around corners. No wrinkling or buckling. Easy to handle. When you yank it off the only thing left behind is a razor edge line—no adhesive sticks to the job. No paint soaks through. Eighty threads to the square inch instead of the ordinary sixty makes Jonflex workable, flexible—and *tough*.

Send the coupon

The 1-inch wide, 36-yard free roll you'll get will do a better job–quicker. Time it and see.

JOHNSON & JOHNSON, New Brunswick, N.J.

Please let me try that free 36-yard roll of one-inch Jonflex Industrial Tape. I. F. 9-29

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Company _____

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Here are the standard features

THE NEW NO. 12

CROWN SPRAY GUN

Brings you at very low cost!

All Purpose Foolproof Spray Head Assembly . . . . assuring finer, faster finishing!

Fluid Adjustment . . . . producing rapid change of material flow!

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Adjustable Packing . . . . for longer wear and freedom from leakage!

Rigid Type Cover Assembly . . . . . a sturdy arm that holds container cover rigid at all times!

A remarkably efficient moderate-priced gun for every industrial paint shop use.

PRICE $16.00

Write us for full particulars and name of nearest jobber

CROWN SPRAY GUN MFG. CO.

1218 Venice Blvd., Los Angeles, Calif.

Aluminum Paints Used Industrially

Aluminum paint—one of the industrial paints which is very rapidly coming into its own, and one which probably has more diversified uses than any other. This is one product which has undergone an intensive and extensive advertising campaign and which, I believe, has backed up in full every claim made for it. It is not only practical for industrial finishing, but has literally taken a prominent place in the field of house painting.

Formerly, in thinking of aluminum paint one merely thought of the small-size cans on sale in paint stores—cans of paint sold chiefly for small decorating around the home. Today, one travels throughout the country, and sees it used in enormous quantities to cover oil tanks, tank cars, bridges, smoke stacks, water towers, factory buildings and countless other surfaces. There must be some good reason for this, since advertising alone would not account for it; there must be some value in the product itself.

This value may be summed up briefly as follows: First, it has great hiding power; it will seal in practically everything encountered in painting; it will reflect light and reduce evaporation; it will give a fume and gaseous resistance wherever it is applied, and it will resist moisture to a remarkable degree.

The nature of the material is responsible for these things. It is not granular, but leafy—flaky, or like fish scales—under the microscope and, when mixed with a good vehicle, forms a solid protective coating over all surfaces.

In the field of industrial finishing its uses are many and its

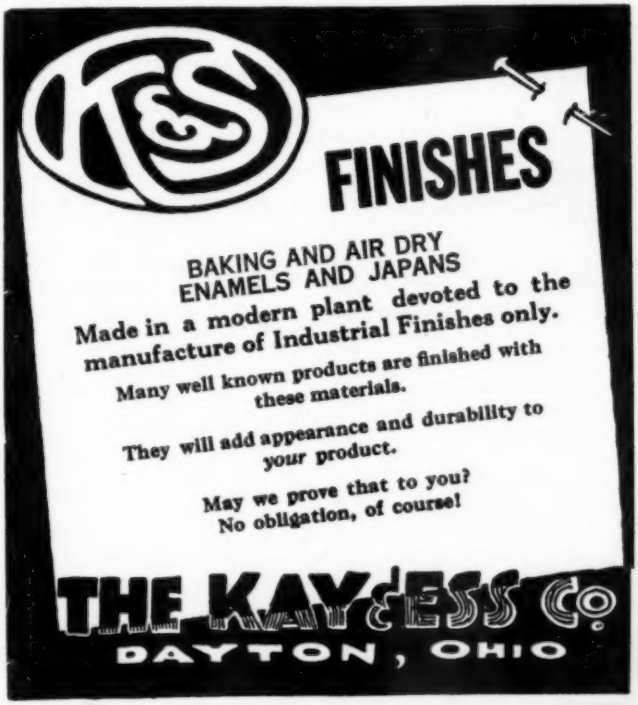
value great. When wooden articles to be finished will be subjected to wide variations in atmospheric conditions, particularly as to humidity, a priming coat of aluminum will effectively seal the surface and prevent subsequent warping and checking. It will also hide blemishes, stains, etc., and will cover solidly in one coat over any color, even black.

Because of its great hiding power, and it's light reflectivity, it is a valuable media for painting the interiors of factories. In most cases, one coat will effectively do the work. It's soft light is easy on the workers' eyes and, due to its ability to reflect the sunlight without glare, it lessens the costs of artificial light. It is an excellent rust inhibitive for steel or other metals and, if properly prepared and used, it makes an excellent priming coat.

Use the Right Vehicle

But a word of caution must be given. It is customary in some plants to buy the dry aluminum powder and mix with whatever vehicle may appeal to the foreman painter or the manager. Some

(Continued on page 111)


FINISHES
BAKING AND AIR DRY
ENAMELS AND JAPANS
Made in a modern plant devoted to the manufacture of Industrial Finishes only.
Many well known products are finished with these materials.
They will add appearance and durability to your product.
May we prove that to you?
No obligation, of course!
THE KAY & ESS CO.
DAYTON, OHIO

Carlsen Sealer Coat

. . . . . *the speedy quick sanding coater for wood!*

APPLIED over stains, fillers or bare wood as an undercoat or surface coat before application of varnishes or lacquers, the Carlsen Sealer provides a full and heavy film that insures a rich, satisfying, enduring surface on the finished product.

We will be glad to submit samples for your approval or demonstrate the Carlsen Sealer in your own plant without cost or obligation, simply to prove that it will do all we claim for it, that it will lower your finishing costs, provide a better finish and sustain your reputation for attractive, high-grade products.

Free trial or will demonstrate without obligation. Write us TODAY!

John G. Carlsen & Co.

Varnishes—Lacquers—Enamels

1446 W. Kinzie St., Chicago, Ill.

Damaskene

THE ORIGINAL WRINKLE FINISH

The following concerns, all located in Newark, N. J., are authorized to manufacture and sell Damaskene finishes:—

FLOOD & CONKLIN CO.
THE PALMER-PRICE CO.
THE BIGELOW VARNISH CO.
NEWARK VARNISH WORKS

Damaskene

THE ORIGINAL WRINKLE FINISH

STABILISAL "A"

Stabilizing Bronze Lacquers

STABILISAL "A" is a material that has been used for several years in Europe as an addition to nitrocellulose bronze lacquers, to prevent their jelling and to minimize the tarnishing of the metallic bronze powder in the dried lacquer film. Polished metal surfaces, protected by a clear metal lacquer containing very small amounts of Stabilisal "A", will not tarnish.

The principal advantages in its use are the elimination of waste of lacquer due to jelling and thickening before using as well as an increased durability of the resulting finish.

Samples and literature upon request.

KUTTROFF, PICKHARDT & CO., Inc.

1150 Broadway New York

QUESTIONS AND ANSWERS

This service department is conducted to meet the reader's need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

How to Mark Colored Bands on Javelins

In the manufacture of javelins we have a problem of marking that must be solved. In order that you understand just what a javelin is we are enclosing a little booklet in which you will find pictures of the javelin, which is about 1-in. in diameter and about 8-ft. 6½-in. in length.

We want to mark some of these with an orange band about 1-in. wide and perhaps 1 or 2-in. above the metal point. Probably this band would be satisfactory at any point most convenient to put it on. Other grades will be designated by blue bands and red bands.

We are wondering if you can give us any information as to the most satisfactory and simple method of putting on these bands of color? We might say that these javelin shafts are of wood and finished in natural color with a coat of transparent lacquer finish.—L. Mfg. Co.

Under the circumstances it is rather hard to say just what would be the best method of doing this. I may first suggest that if the metal point is put on after the finish is dried on the handles or shaft, that the shaft be held in perpendicular position and dipped in a suitable color which would coat the end of the shaft up two or three inches above where the hollow end of the metal point should come.

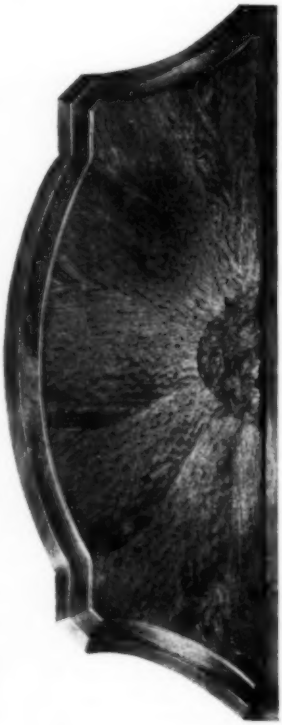
When this coat is dry and hard, dip again in another color, such as black or aluminum bronze lacquer; this time the javelin wouldn't be dipped as deeply into the finishing material, and as a result it would leave one or two inches of the first color showing.

However, if the point is put on first and all finishing is done afterwards, then it will require another method. Since I am partial to the spraying system, I think I would prepare a simple jig as follows: First, I would make an

open frame or rack as long or a little longer than the shaft of the javelin, see sketch. Then I would make a masking shield of light sheet metal and hinge this shield to the rack so it could be dropped over the mounted javelin shaft as shown in my sketch, where *AA* are notched partitions in the frame, *B* is the backstop for one end of the javelin, and *C* is the sheet-metal shield hinged to one edge of the frame.

In operation, the finished javelin shaft is laid in the notches of partitions *AA*, with one end

A Perfect Finish for Artistic Woodwork



The finish should certainly be appropriate to the work. Cheap varnish would ruin this beautiful table top as effectively as barn paint. Once the delicate grain is obscured and marred by checking and flaking and other defects, it might better be entirely covered.

For a consistently high-class product, finish with Pecora Rhino-Var. May we offer a definite recommendation (with sample) to meet your specifications?

FINISHED WITH PECORA RHINO-VAR THERE'S NOTHING BETTER

Pecora Paint Company

3rd and Sedgley Streets
Philadelphia, Pa.

Established 1862 by Smith Bowen

Incorporated 1911

against backstop *B*. The shield *C* is dropped over the shaft so its slotted opening (the width of color stripe to be made) is positioned where the stripe is to come. The turned-down sections on both sides of the slot are notched to fit over the round shaft, but the edges of these notches are smoothed to prevent them from scratching the finished javelin shaft when it is rotated.

Finishing End Grain

I read J. W. K.'s. comment (page 92, July issue) on my article entitled, "Finishing End Grain" (page 61, June issue) with much appreciation. In explanation of why I prefer a pad to a brush on the articles mentioned (exposed ends of chair legs, table legs, etc.) experience has taught me that it takes a more experienced and higher-paid workman to use a brush in shellac than a pad. When using a brush, a little overlapping of the brush will cause some shellac to run down over the sides, and these runs must be wiped off with a rag.

I recall one instance where one of the best and fastest boys in the gang started using a pad for the whole operation, and he did the work as rapidly or even more rapidly than those using brushes. His finishing was better looking and required fewer repeated applications of shellac than those touched up by brushes. I also beg to differ from J. W. K. where he says it requires an expert to handle a pad. Girls or boys learn in about 15 or 20 minutes.

We use no oil in the shellac, and we have no trouble with the rag or pad sticking. Of course, I would not advise using a pad on a large surface; neither would I

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Flat Ox-Hair Lettering or Touch-Up Brushes

Nickel plated ferrules, polished handles; chisel points. Especially adapted for one stroke work where lead colors are used. A general use brush. Set in rubber.

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Size ¼"	$2.50
Size ½"	3.50
Size ¾"	4.50
Size 1"	6.00
Size 1¼"	9.00
Size 1½"	10.50
Complete set of six sizes	$3.00

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164 W. Lake Street Chicago, Ill.

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Regardless of product a National Decal applied here and there marks the piece as distinctive in point of design and finish.
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Hundreds of designs from which to choose, or special designs as ordered. Decal manufacturers for forty years.
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222 N. 60th St.
Philadelphia, Pa.

advise using a brush. We are spraying shellac on flat surfaces with a spray gun and getting satisfactory results. We confine the pad to small surfaces only and not to table tops.

Another reason why I prefer a pad to a brush is that it doesn't show a brush mark; it will not show a mark of any kind if used on surfaces not exceeding 3½ to 4-in. in diameter. Also, it forces more material into the end grain and as a result the surface glazes better. A brush may seem to lay on a smooth full-bodied film, but when you get back to it you find it seems to have sunk, and another wipe with the brush is in order, etc. When using a pad, however, the operator sticks with the job and gives the end wood all it will take. As a result the job generally requires less time and the finish is not a disappointment, as often happens with a brush in the hands of less experienced and cheaper labor.

But shop conditions, class of work, capability of workmen and the grade of material one is obliged to work with—any one or more of these factors may cause the foreman finisher to choose and use certain tools and methods in preference to others; so if J. W. K. prefers to use a brush, I have no quarrel with him for doing so—but a brush is a scarce article in most modern plants now.—M. V. L.

Franche & Co. Merged With James B. Day & Co.

C. E. Franche & Co. for many years manufacturers of shellac and wood finishing materials in Chicago has been merged with James B. Day & Co.

Headquarters will be with James B. Day & Co. 1872 Clybourn Ave., Chicago.

New Materials and Equipment

Presenting briefly, certain outstanding features of new materials and improved equipment which have been developed for use in modern industrial finishing departments

Binks New Hurley Unit Announced

The Binks Mfg. Co., 3001 Carroll Ave., Chicago, announces the completion of an All-Purpose Utility Spray-Painting and Finishing Outfit, known as the "Binks New Hurley Unit."

This outfit is especially adapted for general utility work such as touching up, refinishing repainting and lacquering practically any product. It is also adapted for the spraying of insecticides and disinfectants.

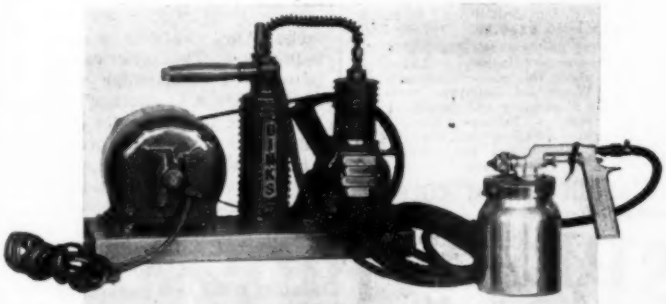
It is a complete unit equipped with a quart-size all-metal container and a *new Binks pressure cup spray gun* supplying an atomized flat spray 4-in. in width.

The air compressor unit is belt driven and connected to a ¼-h.p. G. E. motor. This unit has a capacity of 2.16 cu. ft. of air per minute.

The outfit is sturdily constructed. A cast-iron air container is located between the motor and the compressor on a pressed metal base which is mounted on rubber feet.

Included with the outfit are 10-ft. of rubber-covered electric cord, attachment plug, and 10-ft. of durable-braided rubber air hose.

The unit is complete, ready for use upon delivery. The inexperienced or experienced operator merely plugs the electrical connection into a light socket, pours the material into a quart pressure container, and starts to work.



Motor, ¼-h.p.; compressor, 2.16-cu. ft. per min.; material container, 1-qt.

The New

All-Purpose Model

Electric Sprayit

YOUR painting costs get jolted down when you put the versatile All-Purpose Electric Sprayit on the job. Big gun performance—small gun convenience—an entirely new development that strikes a happy medium in size and price. All maintenance work done quickly anywhere. Simply plug in at the nearest light socket. On production jobs where the product is big, take the Sprayit to the work. Complete with ¼ H. P. motor, powerful compressor, 2-gallon capacity aluminum container for paint, newly designed gun with simple, accurate adjustments for fine trim work or wide fan spray for large surfaces. Quart container for small jobs, which fastens direct to gun, also furnished. All necessary hose, cord, etc., included. Price f. o. b. South Bend, **$149.50**

A paint job is a Sprayit job in nearly every factory. Learn more about this cost-cutting outfit. Write for literature completely illustrating and describing the new All-Purpose Electric Sprayit. Leading mill supply jobbers throughout the country are ready to serve you.

ELECTRIC SPRAYIT CO., Inc.

1609 E. Colfax Ave. South Bend, Ind.

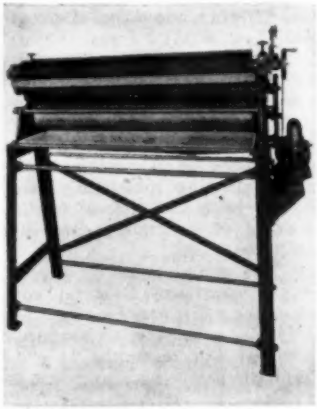
SPRAYIT *Electrically*

REG. U.S. PAT. OFF. 12-20-27

Power Machine Spreads Paint and Lacquer

The Naz-Dar coating machine, announced as a development of Naz-Dar Co., 3011 Montrose Ave., Chicago, Ill. and illustrated herewith, will coat sheets of material of any size stock up to 1-in. in thickness and up to 42-in. in width. Special machines are sometimes built for larger or smaller size sheets.

The coating machine works on a simple principle. A composition roller revolves in a tank of paint,



"1200 sheets 30x40-in. per hour."

lacquer or whatever material is being used. This roller carries the paint to a steel roller which in turn carries it to another composition roller that deposits the coating on the stock in production. The object of the several rolls is to secure perfect distribution of the paint. The forth or bottom roll is steel. The stock being coated is inserted between the bottom steel roll and the composition coating roll. As it passes through, it receives a uniform coating of paint.

Try this rapid drying Sealer.

It's W-Seal Brevolite...dries in less than 30 minutes. Prevents lacquer solvents from bleeding filler and stain, and requires no thinner for spraying. Makes ideal foundation for subsequent lacquers coats, with necessary depth and lustre to satisfy customers demand.

Use W-Surfacer under lacquer enamel finishes on wood or composition. It fills rapidly, sands easily and can be thinned to brush or spray consistency. One coat of W-Surfacer fills perfectly.

For your lacquer requirements try Brevolite Lacquers and Lacquer Enamels, or the new popular Brevocrakles.

Write for samples and particulars on using W-products to improve your finishing and reduce costs.

WAUKEGAN CHEMICAL
"Values that Endure"
COMPANY
Waukegan - Illinois

Flint
Flat
Finish

Mahogany, walnut, and other close-grained woods take soft rubbed tones of unusual depth when sprayed with FLINT FLAT FINISH.

Tough . . . flexible . . . waterproof . . . its heavy body gives exceptional coverage.

Requiring no rubbing, it is ideal for mass production where taste and distinction must be expressed at no sacrifice to production efficiency.

A demonstration can be arranged at your convenience.

MAYER & LOEWENSTEIN

43-43 VERNON BOULEVARD
LONG ISLAND CITY, NEW YORK
ESTABLISHED 1846

For coating thin sheets such as metal, thin cardboard, etc., it is necessary that a scraper knife be mounted on the bottom steel roller. For material of this kind it is necessary that the coating roll and the friction steel roller be in contact. The steel scraper knife is used to keep the bottom steel roll free from paint and eliminate smearing on the bottom of the sheet.

Two men operate the machine, one standing on the feeding side inserting blank stock and the other catching the stock as it comes coated from the opposite side. It is only necessary for the feeding operator to place the edge of the stock against the rolls. The driven rolls of the machine then carry it through until it emerges on the opposite side.

Under actual operating conditions, a table is often placed on the feeding side for convenience, and sometimes on the side from which the stock emerges. For large production it is very simple to arrange a conveyor to carry the coated stock to any desired point. Provision is made on the machine so that no changes need be made to add a driven pulley shaft. When a conveyor of any length is used, it is most practical to equip the machine with a motor of greater horsepower than is ordinarily furnished.

Each roller on the machine has a separate adjustment so that compensation can be made for any thickness of stock, and to regulate to an extent the amount of paint that is deposited on the stock. The steel rollers will last indefinitely, of course. The composition rollers are perishable but usually give from ten to 12 months service if taken care of properly. When the roller does become damaged beyond practical use, it can be re-

covered again at a nominal expense.

The machine will operate all day under constant production—just as long as the paint tank is kept supplied with material. For small runs, the machine will operate with as little as one-half gallon of paint in the tank. It holds approximately two gallons of paint and if desired can be kept full at all times by hanging a slow-dripping drum or five-gallon container over the machine tank.

This machine, in addition to being used for the ordinary run of coating such as cardboard and metal, is being used for many special purposes such as coating wallboard, Celotex, ironing boards, imitation marble, furniture panels, table tops, etc. For best results, special coating colors and lacquers should be used.

New Crown Spray Gun

According to the announcement of the Crown Spray Gun Mfg. Co., 1218 Venice Blvd., Los Angeles, Calif., the new Crown No. 12 model spray gun, hereafter to be included with Spra-More portable painting machines, "is the first moderately-priced gun to embody standard features used on more expensive equipment."

"Due to its exceptional speed and the excellent quality of its work, the new No. 12 virtually doubles the utility and working capacity of the Spra-More unit," declares Mr. Henry O. Winkler, president of the manufacturing concern.

The application of so much material per minute, with the same amount of air, is made possible by the gun's improved nozzle. This embodies features for control of fluids and air mixture which pro-

Keep Your Spray Booths Clean

Material Accumulations Create a Fire Hazard!

You can ill afford to take chances—your property, products in process of manufacture, time contracts on file, etc., make it necessary that you provide every means of avoiding delay in production because of fire. Unclean spray booths form a fire hazard, but easily eliminated by regular cleaning with—

XCEM

This is a material—now used extensively in the automotive industry—that makes cleaning easy, safe and economical. Reduces the fire hazard and improves working conditions.

Address Dept. A for complete information on XCEM—it cleans!

MAGNUSON PRODUCTS CORPORATION

3rd and Hoyt Sts. BROOKLYN, N. Y.

Warehouses and Representatives in Principal Cities

FIXES
SCRATCHES MARS, HOLES Scarred Finishes

Where Finish is damaged the quickest and easiest way to permanent repair is with

CAMPBELL'S STICK SHELLAC

This is melted in the hole, dent or scratch. The damaged place is then rubbed down and polished. The Shellac will not shrink nor check and is extremely tough. It is indeed the easiest, the quickest, the most economical and only permanently satisfactory method to repair serious injury to any finish.

Stick Shellac color card and booklet "How to Repair Varnished Surfaces" will be sent you free upon request.

The M. L. CAMPBELL CO.
1007 W. 8th St. Kansas City, Mo.

Sandblast or paint with the MULTIBLASTER

various graining effects on wood surfaces preparatory to lacquering can be done very efficiently and economically with the MULTIBLASTER SANDblast. Also impregnates by stencil process, any desired designs on cabinet work. MULTIBLASTERS are portable and made in types for every purpose of SANDblasting and spray painting. Sent on 10 days' trial

NOTE THESE PRICES

	Price	Gun	Hose	Pump
Standard Blast	$30	8 lbs.	1	90 lbs.
Medium Blast	18	8 lbs.	½	70 lbs.
Bench Blast	15	3 lbs.	½	50 lbs.
Paint Spray	18	2 lbs.	½	50 lbs.

Why pay more?

George M. Stowe, Jr.
Manufacturer Since 1904
1449 Forest Ave. Buffalo, N.Y.

Pays for Itself in Less than 30 Days.

duce perfect atomization, uniform distribution and the elimination of drip or splatter. A simple nozzle adjustment permits instant

A Pacific Coast Product

change from a wide, even fan spray to a round flow. In addition to greater speed and finer finishing, the new gun handles heavier materials with ease.

Although primarily designed to operate with the Spra-More unit, the new No. 12 will also be marketed with an air filter and pressure regulator for users who already have compressors.

Whirls Paint Drums to Agitate Contents

The Vol-u-Meter Co., Inc. (equipment for cleaning, filling, agitating and inspecting drums) 710 Ohio St., Buffalo, N. Y., announces "Old Faithful"—a machine which is hailed as "an ideal combination designed to efficiently and thoroughly cleanse drum interiors, or to mix the contents of rotated drums in minimum time at minimum cost."

This machine automatically tumbles the drums end over end, rotating them on their axes at the

Are you SATISFIED *with the Finish on your product?*

It is just as important that your product have a good finish, as that it should be well designed and built. Anything that improves its appearance and durability, increases its sales appeal and the ultimate satisfaction of your customers.

For that reason, it will pay you to use Thresher-Lac Clear Gloss Spraying Lacquer. This exceptional finish has proved its superior beauty, quality and economy in many plants.

Thresher-Lac Clear Gloss Spraying Lacquer is waterproof and extremely durable, builds up quickly, has good filling qualities and gives depth to the finish. It spreads smoothly, drying to a beautiful lustre. It can be rubbed, or, if a similar effect is desired without rubbing, this can be obtained by using Thresher-Lac Clear Flat Spraying Lacquer.

In our seventy years of making high grade varnishes, enamels and lacquers, we have learned a lot about finishing problems of all kinds—have helped many manufacturers improve this feature of their products. Perhaps we can help you. We know that, if you use Thresher-Lac Clear Gloss—or Clear Flat Spraying Lacquer, you can be sure of complete satisfaction.

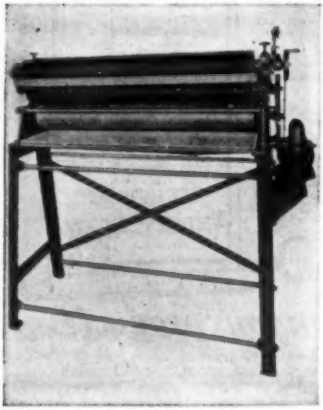
THE THRESHER VARNISH COMPANY
1150 E. Monument Avenue Dayton, Ohio

THRESHER

VARNISH · ENAMEL · LACQUER

The NAZ-DAR Coating Machine

—the answer to a long felt need for a practical coating machine that could be obtained at a reasonable price.



Uniformly coats oil paints, enamels, varnishes, lacquers, etc., on practically any surface—process, news, chip, card or wall board . . . tin, metal, wood, glass, and similar sheet materials.

A uniform coating of any desired thickness is deposited at great speed. At full capacity will coat at least 1200 sheets 30 x 40 per hour. Will exceed in one hour, full day's production by old screen coating process and in many instances will more than double production and eliminate an entire operation over spraying, dipping, etc.

Of simple but sturdy design; quick adjustments; unique automatic fountain feed; interchangeable rollers; requires no special wiring; quiet in operation; easy to clean; portable.

Write today for price—and fully illustrated circular.

NAZ-DAR COMPANY
4014 N. Rockwell St. Chicago, Ill.

same time. A patented counterweight arrangement eliminates unnecessary gears, sprockets, driving chains and worn gears,

Drum tumbles end over end four times during which it rotates once. Motor required, 2-h.p.

resulting in long life, simplicity, low initial and maintenance cost. The accessibility of the machine makes for speedy mounting and dismounting of drums, this reducing the cleaning time. Further speed in cleaning is obtained in that the operator, without removing the drum from its cradle may: 1—rotate drum to "bung-up" position to receive the cleaning solution and chain, 2—inspect the interior, 3—rotate to "bung-down" position for discharging the cleaning solution and chain. These machines are made in various sizes.

Bronzing Lacquer Stabilizer

Kuttroff, Pickhardt & Co., Inc., (nitrogen products, chemicals, etc.) 1150 Broadway, New York City., announces a bronzing lacquer stabilizer called "Stabilisal," which has been used in Europe for several years to prevent jellying or thickening of bronze powders in lacquers; also to prevent tarnishing of the metallic powders in the dry film, and to prevent tarnishing of polished metal surfaces under clear lacquers.

A very small addition to any ordinary bronzing lacquer suffices, and this may prevent great waste

of lacquer that jells before being used up, as well as improving the durability of the finished job.

Aluminum Paints Used Industrially

(Continued from page 89)

concerns use linseed oil with it, which is not at all advisable. Others buy what is called a bronzing liquid, or an aluminum mixing liquid, not knowing what the base of such product is or what its effect will be. This is all wrong if the best results are expected or desired.

The Aluminum Co. of America, which incidentally does not sell paint, has made laboratory tests for many years, and decided that the best vehicle for aluminum is a long-oil spar varnish. This varnish has a high percentage of oil to gum, with a small percentage of volatile matter. In other words, a long-oil spar varnish, such as the trade has known for many years, makes an excellent vehicle —if the mixing is to be done in the plant.

However, it is far better to buy the aluminum ready mixed by the manufacturer, for it will not harden in the can when properly mixed with the vehicle, and all reputable manufacturers have specifications for the vehicle furnished them by the manufacturer of the pigment.

The ordinary mix is about 2-lbs. to a gallon of the vehicle, which places its cost, ready for application, on a par with other industrial finishes.

I believe that a more complete knowledge of aluminum paint and its various uses will place the average industrial finisher in a much better place as regards complete mastery of his craft.—C. Dan Youngs.

new!

Economy Deluxe Sprayer

For the user of industrial spray equipment this new *Economy DeLuxe Sprayer* gives better application of any paint, varnish or lacquer. Combines high efficiency, simple operation and puts new life in the paint shop. Light in weight, does not clog, easily cleaned. There are many good reasons for the present popularity of Economy Spray Products PRICED: *DeLuxe Spray Gun—with material tube, cover, container, 25 feet air hose and connections and agitator . . . $32.00. Above without agitator . . . $30.00. DeLuxe Gun without any of above accessories . . . $22.00. 25 feet air hose with connections . . $4.50. 1 quart metal container without cover . . . $2.50.*

. . . . . .

ECONOMY MACHINE PRODUCTS CO.,
5214 Lawrence Avenue,
Chicago, Illinois.

Please ship me equipment listed on margin. Send complete specifications and data on other Economy Spray Equipment.

Name .....
Address .....
City .....State .....

Let Light be Reflected

On the workers in your plant, from walls that are white. Take advantage of this willing partner to efficiency. It will not only give your men a chance to improve their work, but your plant will present an orderly appearance and will be strictly sanitary.

The one sure way to brighten up your entire plant, is to use FRENCH'S MILL WHITE. Give special attention to your finishing room and see that the walls receive this light reflecting, sanitary coating. The opacity, ease of application and spreading qualities of FRENCH'S MILL WHITE are unsurpassed.

The cost is slight when compared with the increased production from your employees. They will do more and better work, when surrounded with these light reflecting walls. You will notice the improved sanitary appearance of your plant. Your workers will be more cheerful.

We have been advising production and factory managers for years, on their paint problems. We invite your inquiry. FRENCH'S MILL WHITE can be supplied in either flat or gloss. Mention the number of square feet to be covered and we will send you a sample and further information. Write to Samuel H. French & Company, 400 Callowhill St., Philadelphia, Pennsylvania.

DIFFICULT LACQUER PROBLEMS

are being solved satisfactorily with

MAXWEAR

(MAXIMUM WEAR)

INDUSTRIAL LACQUER

HOOSIER PAINT WORKS

FORT WAYNE, IND.

Lacquer Finishes at Pacific Radio Show

Heretofore the public has known little or nothing about the type of finishes used as a protective coating on furniture. The finish was either "walnut" or "mahogany," which was the usual term applied to both the wood used and the finish. Through the medium of advertising and general color beautification movements, the true value of protective coatings are brought to the attention of the general public.

It is interesting therefore to note that quite a number of visitors at the Radio Show held in San Francisco, July 17 to 24, asked many questions about the various finishes. From this interest we can assume that the day has arrived when the buying public has in all probability developed "an educated thumbnail" which is frequently employed to determine whether the finish will whiten. Many people have decided by friction through rubbing whether the film will be tacky—and by tilting the piece to the "light angle" they can determine the depth or fullness of coating.

Lacquers, which predominate in the protective coating field for radio cabinets, have gone through a series of changes in the past few years. Today they represent a product based on nitrocellulose, having the film-building properties of a varnish, giving a hard film of great durability but one which is flexible enough to contract and expand under atmospheric and climatic changes.

In a well-balanced lacquer, users of industrial finishes have a highly valuable and satisfactory product. When a lacquer is made by a responsible concern that recognizes the demands for excel-

lence and believes in doing research work in all of its raw materials, then we can say the merits of lacquer in its proper place will far outweigh any disadvantages resulting chiefly from inferior lacquers produced without adequate research work and made of inferior raw materials—perhaps carelessly manufactured. I do not believe that a successful cheap lacquer can be made.

Among the newer developments in finishes for radio sets, there is a product known as Carbon Coating lacquer which is available in various colors. The carbon resistant units in radio sets have different uses, one of which is the operation of the detectors. It is advantageous in the assembly of these units to have the different units coated with various colored lacquers to aid the assemblers in getting correct units properly placed without testing. However it is essential in these products, which are of dipping nature, that the pigmented content be of select nature—something that will not affect the resistance of the unit.

Crystallizing lacquers, made on a nitrocellulose base, have likewise made their appearance. These materials, unlike the crystallizing varnishes, produce an irregular film that assumes a crystalline form. These finishes are usually protected with varnish coatings. The compactness of metal radio cabinets attractively finished are worthy of note, too. Among some of the finishes displayed other than those mentioned, there were wrinkle finishes, crinkle finishes and crackle finishes.—M. C. Roberts.

Rapid turnover is more dependent upon an excellent finish than is generally recognized.

FREE . . .

generous sample FILLERUB

—a prepared vegetable fibre which is now being used by hundreds of nationally-known casegoods manufacturers. It.....

Reduces rubbing time 25%.
Has long useful life.
Does not scratch.
Does not break up.
Does not litter the floor.
Gives a better finish.
Insures filling of smallest pores.

A generous free sample will convince you of its better working qualities.

Send this coupon

OSCAR SMITH & SONS CO.

Clearfield and C Sts., Philadelphia, Pa.

Kindly send full particulars and free sample of FILLERUB at once.

Name .....

Address .....

You can now buy

CADILLAC SHELLAC

"WATERPROOFED"

Send for sample for test.

CADILLAC SHELLAC COMPANY
Incorporated

Ferndale (Detroit) Michigan

RESTORING VARNISH
Will Save The Old Finish

Knitteen

FOR CRACKED VARNISH

Brushed on over the old varnish scientifically "knits" and welds the old varnish together, closing all CRACKS and CHECKS permanently, at the same time brings back the life, color and beauty of old varnish on fine
Furniture, Cabinets, Pianos, etc.
A gallon will cover 400 sq. feet
PRICE $5.00
Trial quart sent postpaid $2.00 Full Instructions
The Corlear Products Co., Inc.
1303 North 27th St. Philadelphia, Pa.

Cleaning, Drying, Spraying Brass Goods

In the hurried process of cleaning stamped brass goods, the articles drying, often rest so close to the steam pipes that the heat darkens some parts of the surface and leaves other parts untarnished. Now if the article is a low-priced one, taking a one-coat spray finish in a light color, these light and dark places will present considerable difficulty for the spray operator, as every discolored place will require special attention to prevent it from showing through.

In one job that I have in mind, the articles to be cleaned were small cylindrical brass cases, each with the head and bottom soldered in. The articles were always handled with the bottom side down, because that was the end to which the water could drain through a hole in the bottom. This punched hole had a burr on the inside and, in spite of some shaking and ordinary drying, a little water usually would remain on the inside of the cylinder.

Now when these cases were packed on trays and the trays moved about, some of this water would jar out and work up along the outsides of the closely-packed brass cases. Later, when a tray of cases was brought in for spraying, the moisture and air had so corroded some of the surfaces that they could not be coated smoothly.

To remedy this, the tray of articles were taken directly from the heater to the spraying frames and, as the frames held them apart so that the whole surface could be coated by spraying, the few drops of water in the bottom of each can did no harm.—Platt.

SPRUANCE QUALITY

Cutting the guesswork out of furniture finishing

To know that the material you work with will give you exactly the result that you have in mind—to have no: "well it isn't what I wanted" — that is what every manufacturer desires.

Uniformity — and uniformity alone — can give you that unvarying result in furniture finish.

SPRUANCE QUALITY FURNITURE STAINS

are made to give the most beautiful results — and to give it the same every time, without variation.

Whatever the finish you may have in mind, there is among these, the one that precisely suits the purpose.

Acid Stains, Shading Stains, Penetrating Oil Stains, Uniforming Stains, Lacquer Shading Stains, Aniline Stain Powders

The Gilbert Spruance Co.

Manufacturers

Wood Finishing Products

Philadelphia, Penna.

"A Finish for Every Purpose"

Industrial Finishing

Issued fifteenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

PRACTICAL PUBLICATIONS, Inc.
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Advertising rates on application.

EDITORIAL

Should Finish Users Operate a Testing Laboratory?

There is a difference of opinion as to whether it is advantageous for the consumer of large quantities of finishing materials to operate a laboratory wherein a research chemist is employed to analyze and test the materials purchased.

Several leading industrial concerns—firms that use thousands of gallons of lacquers, varnishes, etc., in the course of a year—have departments where purchased materials are put to chemical and physical tests. Also, some manufacturers are even specifying what the formula should contain in the way of solids and liquids.

Unless the user of finishing materials employs an experienced lacquer or paint chemist who thoroughly understands all about the finishing materials, then there is little if anything to be gained. While an average chemist can pick up enough information concerning paints and lacquers over a period of time, he cannot be relied upon to have an accurate and thorough knowledge of the problems of the paint and lacquer maker. In other words, while he may be a fine chemist, he is not a specialist, and the concern conducting a laboratory needs a specialist. Then too, the number of paint and lacquer chemists, who really have a wide experience and know their business is limited. This makes the problem even more acute.

Unless the buyer of finishing materials uses an enormous amount of material—say from

SOMETHING NEW!

The day of rubbing and polishing by hand in production is at an end. Polishing Machines require a specially prepared polish, a polish that will clean, polish and wax in one operation, will highly luster and not injure the surface, AND WILL LEAVE YOUR POLISHING PAD AT THE END OF THE DAY AS CLEAN AS WHEN YOU STARTED. Such a polish is LANDRO'S.

A Trial Will Convince You

Landro - Summers Co., Inc.

12132 Woodrow Wilson Detroit, Mich.

Kindly mention INDUSTRIAL FINISHING when writing advertisers

"An Ounce of Prevention" for lacquer and paint sprayers

WILLSON'S SPRAY COATING RESPIRATOR - - - - - - - with pressure air supply

This new Willson Product is more than "an ounce of prevention." Although it is only eighteen ounces heavy, it does thoroughly the job for which it was designed. Its efficiency is the direct result of its low weight; being comfortable, it is worn by many men who have persistently discarded other protective devices, complaining that they were not comfortable.

Air is obtained from the air line to the spray gun, filtered to free it from moisture and odors and stored in the rubber container on the operator's back. A dual feed to the face mask assures a constant flow of fresh air which can not be blocked by the operator's turning his head or bending.

Exhaled air is immediately disposed of through aluminum ports at either side of the mask. A union in the supply line allows the quick separation of the breathing apparatus from the gun and air line.

If you require further information, ask your dealer or write direct to Willson Products, Inc., Reading, Pa., specifying make of spray gun to be used. Price, $25.00 complete, f. o. b.

WILLSON PRODUCTS, INCORPORATED
Reading, Pennsylvania

Hy-Speed

EXPLOSION-PROOF ELECTRIC MIXERS

Clamp to *any* tank and mix *all* liquids

MIX QUICKER

LAST LONGER

COST LESS

Note Patented "Push Pull" Propeller Action.

ALSOP ENGINEERING CO.

47 West 63rd St. New York

Style No. 77

Style No. 77 is a light weight chemical cartridge respirator designed for protection on all operations where injurious or obnoxious vapors or gases are encountered. Especially developed for paint spraying. Made of aluminum with a soft molded sanitary cushion to fit snugly against the face. There is real comfort and protection in the No. 77. Price $4.50 each.

CHICAGO EYE SHIELD CO.

2300 Warren Ave. Chicago, Ill.

250 gallons upward per day—it is doubtful if he can operate a finishing research laboratory to advantage. If he were to use an endless number of colored enamels and if many of his orders came through with special colors and finishes, it might be possible for him to buy enamels ground in primary colors and then assign the paint chemist to mix up special colors, etc.

If the large consumer does business with a financially-responsible and reputable house—which he should—he is pretty sure to get the kind of material he requires. Paint, varnish and lacquer manufacturers have enough troubles without promiscuously deviating from their tested and proven formulas. A reliable concern will have such a careful formulating system that only through a mistake on the part of some employe, will there ever be any perceptible difference in the uniformity of its products.

The large consumer must be careful to deal with a company that is willing to stand back of its products, provided they are used under proper conditions. A very effective and economical way to check up on the material is to send out samples from time to time to private laboratories that specialize in problems of this kind; the results of these repeated tests can be easily compared. A difference in color or uniformity can be quickly ascertained in this way. Also, samples can be exposed to durability tests, etc.

If a paint or lacquer chemist is to be utilized for other work besides checking up on all materials purchased, his services might be both advantageous and profitable. If not, it may be money wasted.

1609 Flat Duco

Gives Amazing Build— Unvarying Superior Results

IS it possible to obtain a flat pyroxylin finish with more than the ordinary amount of build—yet, at the same time, to secure good working qualities, durability, and dependable uniformity?

Modern manufacturers who are using 1609 Flat Duco will unhesitatingly answer, "Yes!" Perfect balance in the formulation—scientifically correct proportioning of the pyroxylin, gum and plasticizer—have made 1609 Flat Duco a superior finish in every respect.

1609 contains an unusually high percentage of solids. Every gallon covers a large area—gives heavy build. It produces a clear, smooth, tough film of great beauty and maximum durability. And the remarkable uniformity of 1609 Flat Duco eliminates variations in the working qualities of different shipments—insures unvarying fine results from every application.

Let us send you data showing how Duco will fit into your specific requirements. A special du Pont chemical staff is constantly employed in perfecting technical processes and developing improved finishing systems for special requirements. They have assisted many prominent manufacturers to capitalize on Duco—to stimulate sales and promote better operating methods with this modern finish.

The wide experience of du Pont engineers is always at your command. Give us the opportunity to show definite advantages in our products over the finishes you are now using.

E. I. DU PONT DE NEMOURS & CO., Inc.

Industrial Finishes Division

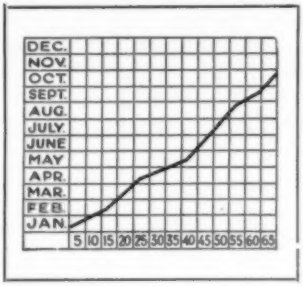
PARLIN, N. J.

Everett, Mass. Chicago, Ill.

San Francisco, Cal.

The Duco oval, on tag or label, now helps the customer to identify Duco-finished furniture on many leading lines. Manufacturers have great confidence in Duco.

DUPONT DUCO **DUCO . . . *made only by du Pont***



Color— The Sales Builder

Wedded to black for years, many products when dressed in color eclipsed all previous sales records.

The magical effect of Color has been felt extensively by manufacturers of varied products—from dust pans to motor cars.

Hilo consistently urges manufacturers to "cash in" on the sales possibilities of Color.

Adopting the idea—hundreds of products have forged ahead of hesitant competitors. Hilo Colored Finishes— Lacquer, Air Drying and Baking Enamels are the colorful sales building finishes that helped.

If there's a possibility that color might heighten your product's sales curve, consult Hilo on a suitable finishing program for your product—in color.

Write for Bulletin No. 7
Hilo Standard Colors

HILO VARNISH CORPORATION

1 GERRY STREET BROOKLYN, N. Y.

PHILADELPHIA BOSTON CHICAGO PITTSBURGH

Air Drying { Clear and Transparent Color Varnishes / Enamels—All Colors, White and Black } *Baking*

Lacquer—Clear, All Colors, White and Black Japans—Black and Rubber Finishes